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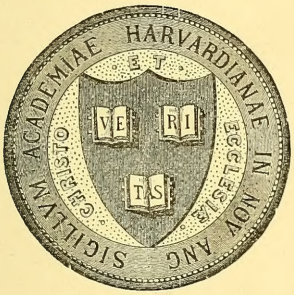

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CATALOGUE

OF THE

LEPIDOPTERA PHALÆNÆ

IN THE

BRITISH MUSEUM.

VOLUME IV.

LONDON:
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CATALOGUE

OF THE

NOCTUIDÆ

IN THE

COLLECTION

OF THE

BRITISH MUSEUM.

BY

SIR GEORGE F. HAMPSON, BART.

LONDON:

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PREFACE.

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The subject of Vol. IV. of the 'Catalogue of Moths' is the classification of the *Agrotinæ*, consisting of about 1200 known species and constituting the first of the fifteen subfamilies into which the very large and dominant family *Noctuidæ*, with some ten to twelve thousand described species, is divided.

The family has two main divisions—the Trifid group of subfamilies with vein 5 of the hind wing obsolescent, inhabiting chiefly the temperate regions and with comparatively few species in the tropical and subtropical zones and those chiefly found in mountainous districts; and the Quadrifid group with vein 5 of the hind wing fully developed, very largely represented in the torrid zones and with few species in the temperate regions and on mountain-ranges.

The difficulty of dealing with the Trifid group is greatly increased by the great variability of many of the species and by the large number of species described from Central Asia and North America, the limits of variation and range of which are very imperfectly known.

In the Asiatic species Staudinger and Rebel's Catalogue has been to a large extent followed; but some of the forms treated in it as varieties will doubtless in the future be found to be distinct species, and some treated as species will be considered to be local

races or varieties, when the distribution of the forms is better known.

In the N. American species Prof. J. B. Smith's most excellent work with his clearly defined genera and species, as published in his Catalogue of N. American *Noctuidæ* and revisions of many groups of genera, has been almost entirely followed, its latest form, published in Dr. Harrison G. Dyar's Catalogue of N. American Lepidoptera, having appeared too recently to be available for reference in the present volume. The range and limits of variation of the species from the Western States are, however, very imperfectly known, and of the very numerous described species many only exist as one or two specimens in scattered Collections in the States, so that no specimens were available for examination, and of these many will doubtless turn out to be varieties and not species when long series from numerous localities have been accumulated and carefully examined.

Prof. J. B. Smith has most liberally presented to the British Museum specimens of all the species not before contained in it that he could spare, has lent many others for examination, and has taken great trouble to clear up numerous points of difficulty. Dr. Harrison G. Dyar also has obtained Sir George Hampson the loan of many species for examination from the National Collection at Washington, and has had coloured photographs prepared of all the unique types contained in that Collection, and, in addition, has most kindly written descriptions of all the known larvæ of N. American species, published in this Volume under the initials " H. G. D."

Mr. W. Beutenmuller, of the American Museum of Natural History, New York, has lent specimens of several species contained in that Collection and sent coloured drawings of the other types in it which it was desired to figure. Dr. A. G. Mayer, of the Brooklyn Institute of Arts and Sciences, has sent coloured figures of the types of species from the Neumœgen Collection which is now in that Museum; these are reproduced on the plates and acknowledged in the text. Prof. A. R. Grote, of Bremen, also has sent a few American species, and Mr. T. D. A. Cockerell, of East Las Vegas, has sent some from

New Mexico. Mr. H. Wolley Dod, of Calgary, Alberta, has presented specimens of many desiderata from that district, and Mr. H. H. Lyman, of Montreal, has obtained the loan of other Canadian species for examination.

Of Palæarctic species, Herr R. Püngeler, of Aachen, has lent many forms from his very fine collection. Prof. Ch. Aurivillius has lent, from the Stockholm Museum, his types from Scandinavia and Greenland and also Wallengren's types from various localities; and Mr. H. J. Elwes has lent all that was required from the Christoph Collection in his possession.

The Abbé J. de Joannis has lent several types from S. Europe, Algeria, and Syria; Mons. Ch. Oberthur types from S. Europe and Algeria, also many of Guenée's types, almost the whole of the remainder of which have been sent for examination by Prof. Bouvier, of the Paris Museum; and Mr. G. T. Bethune-Baker his types from Egypt.

Mons. Paul Dognin, Mr. Herbert Druce, and Mr. W. Schaus have lent their types from Tropical America; Prof. F. Karsch, of the Berlin Museum, has examined Maassen's types from Colombia and Ecuador described in Stübel's 'Reise;' whilst of the species described from Patagonia and Magellan the types described by the late Dr. Carlos Berg have been lent from the Buenos Ayres Museum, Mons. Paul Mabille has lent his types, and those described by Dr. Staudinger have been sent from the Stockholm Museum, and by Prof. K. Kræpelin from the Hamburgh Museum.

Mr. E. Meyrick has sent his types from the Australasian region, and others from Hawaii have been lent by Dr. J. D. Alfken, of Bremen. In addition to these, all those whose assistance has been acknowledged in former volumes have continued to give any help that was asked of them.

In this Volume the plates are reproduced by trichromatic photography, which is better suited to give the effect of dull shades grading one into the other, such as are found in most *Noctuidæ*,

whilst chromolithography is better suited for reproducing sharply-defined bright colours: some allowance will doubtless have to be made for the figures of the American species that have been reproduced from coloured photographs; when this is the case, it will always be found stated in the text.

E. RAY LANKESTER,
Director.

British Museum (Natural History),
June 20th, 1903.

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CATALOGUE

OF

LEPIDOPTERA PHALÆNÆ.

Family NOCTUIDÆ.

Proboscis usually well developed, rarely aborted; palpi usually upturned, sometimes very long, with the 3rd joint erect, recurved over head, or porrect, and naked, dilated at extremity, hairy or with tuft of hair on inner side, often short and porrect or in some groups very long and rostriform; maxillary palpi rudimentary except in the *Hyblæinæ*; frons rounded, in some genera with rounded or conical prominence or corneous processes of various forms, especially in the faunas of more arid countries; eyes usually naked, in some groups overhung by long cilia, or hairy; ocelli present; antennæ of male rarely nearly simple, usually ciliated, often serrate or pectinated, rarely in the female also, very rarely with uniseriate branches; tegulæ in *Cucullia* produced into a hood; pro- and metathorax often with crests or the thorax with ridge-like dorsal crest; tibiæ almost always with the spurs well developed, in some groups spined; pectus, legs, and abdomen of male often with expansible tufts of scent-hairs in folds; abdomen often with dorsal series of crests; wings usually broad and well developed, sometimes narrow and elongate, the termen often angled or scalloped. The neuration is almost uniform in the great majority of genera: fore wing with vein 1 *a* slight and not anastomosing with 1 *b*; 1 *c* absent; 2 from near middle of cell; 3 and 5 from near lower angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole, 7 from the areole; 11 free from the cell. Hind wing with veins 1 *a* and *b* developed; 1 *c* absent; 2 from middle

of cell; 3, 4 from lower angle, rarely stalked; 5 obsolescent from middle of discocellulars, or more strongly developed from below middle, or fully developed and more or less approximated to lower angle of cell; 6, 7 from upper angle or shortly stalked; 8 arising free, then bent down and touching the cell near base, then again diverging from it. In the genus *Stilbia* of the *Acronyctinæ*, in a few genera of *Noctuinæ*, in most *Sarrothripinæ*, and in many *Erastrianæ* and *Hypeninæ* vein 8 anastomoses with the cell to middle. In many genera of *Sarrothripinæ*, *Acontianæ*, *Erastrianæ*, and *Hypeninæ*, and in the *Hyblæinæ*, the subcostal neuration of the fore wing differs in various ways from the normal type. Frenulum always present, in the *Euteliancæ* and *Stictopterinæ* simple in the female as well as the male; retinaculum of male usually consisting of a tuft of hair from subcostal nervure, in the *Sarrothripinæ* and *Acontianæ* it is formed by a corneous bar; in the female it consists of a tuft of hair from median nervure.

The family is of vast extent, the species being mostly of purely nocturnal habit and varying in size from very minute to very large forms. It is divisible into two main groups:—(1) With vein 5 of the hind wing obsolescent from the middle of the discocellulars, mostly belonging to the temperate faunas and subdivided into four subfamilies: (A) *Agrotinæ* with the mid and hind tibiæ, or the latter only spined, (B) *Hadeninæ* with the eyes hairy, (C) *Cuculliancæ* with the eyes overhung by cilia, and (D) *Acronyctinæ* with the eyes naked and not ciliated. (2) With vein 5 of the hind wing fully or nearly fully developed and more or less approximated to lower angle of cell, subdivided into eleven subfamilies:—(A) with the frenulum simple in female, consisting of the *Euteliancæ* with lateral tufts of hair at anal extremity of abdomen, and the *Stictopterinæ* without these tufts; (B) with the retinaculum of male formed by a corneous bar, consisting of the *Sarrothripinæ* with small tufts of raised scales in cell of fore wing, and the *Acontianæ* with the cell smoothly scaled; (C) the *Catocalinæ* with the mid tibiæ and often the fore and hind tibiæ spined; (D) the *Mominæ* with the eyes hairy; (E) the *Plusianæ* with the eyes overhung by cilia; and four subfamilies with the tibiæ and eyes normal: (F) *Noctuinæ* with vein 5 fully developed and approximated to lower angle of cell, (G) *Erastrianæ* with it somewhat obsolescent and curved from below angle of discocellulars, (H) *Hypeninæ* with it fully developed from well above angle of cell and parallel to vein 4, finally (I) the very aberrant subfamily *Hyblæinæ* with the maxillary palpi well developed and all the veins of fore wing from the cell.

Egg upright, with the micropyle at the top.

Larva usually naked, the warts with only one hair, rarely with large hairy warts or spatulate filaments. In the first group of subfamilies, and also in the *Euteliancæ*, *Stictopterinæ*, *Sarrothripinæ*, *Acontianæ*, and *Hyblæinæ*, the larvæ have the four pairs of abdominal prolegs fully developed; but in the *Catocalinæ*, *Mominæ*, *Plusianæ*,

Noctuinæ, *Erastrianæ*, and *Hypeninæ* the 1st pair or first two pairs are usually more or less aborted, and the larvæ are semiloopers, this character being most strongly developed in the young larvæ, and therefore probably adaptive and not ancestral. In the *Acontianæ* many species have the thoracic somites greatly swollen.

The larvæ in the 1st group of subfamilies usually pupate in the earth without a cocoon, a cemented chamber being often formed; in some species of *Acronycta* and in most of the second group a

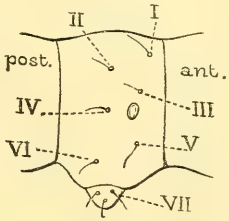


Fig. 1.—Larva of *Agrotis pronuba*, somite vi.

cocoon is made among leaves, on bark, or on the surface of the ground. The species of the genus *Eublemma* feed on *Coccidæ* and a cocoon is formed covered with their skins.

The tubercles are usually simple with single hairs: iv, v well separated, iv tending to become situated just behind the spiracle but varying in position on the different somites and in different species from below to above the spiracle; the setæ of vii are never consolidated into a distinct wart, but the three hairs are scattered on the outside of the leg or on the chitinous leg-plate, which is frequently developed; the two sublateral tubercles are v, vi; tubercles vii and viii appearing ventrally on the leg-less somites; in some species of *Acronycta* the tubercles are represented by large hairy warts (Dyar, Ann. N. Y. Acad. Sci. viii.).

Pupa with the 5th and 6th abdominal segments free, the moth when emerging from the cocoon leaving the pupal skin retained within it by the cremaster.

Key to the Subfamilies.

A. Maxillary palpi absent.
  a. Hind wing with vein 5 obsolescent from or from just below middle of discocellulars.
    a^1. Mid and hind tibiæ, or hind tibiæ only, spined ..... *Agrotinæ*.
    b^1. Mid and hind tibiæ not spined.
      a^2. Eyes hairy ..... *Hadeninæ*.
      b^2. Eyes not hairy.
        a^3. Eyes with long overhanging cilia ..... *Cucullianæ*.
        b^3. Eyes not ciliated ..... *Acronyctinæ*.

b. Hind wing with vein 5 well developed.	
a^1. Hind wing with vein 5 more or less approximated to 4 at base.	
a^2. Frenulum of female simple.	
a^3. Abdomen with lateral anal pencils of hair	*Eutelianæ.*
b^3. Abdomen without anal pencils of hair; fore wing with tufts of raised scales in cell	*Stictopterinæ.*
b^2. Frenulum of female multiple.	
a^3. Retinaculum of male bar-shaped.	
a^4. Fore wing with tufts of raised scales in cell	*Sarrothripinæ.*
b^4. Fore wing without tufts of raised scales in cell.....	*Acontianæ.*
b^3. Retinaculum of male not bar-shaped.	
a^4. Mid tibiæ spined	*Catocalinæ.*
b^4. Mid tibiæ not spined.	
a^5. Eyes hairy	*Mominæ.*
b^5. Eyes not hairy.	
a^6. Eyes with long overhanging cilia	*Plusianæ.*
b^6. Eyes not ciliated.	
a^7. Hind wing with vein 5 from close to lower angle of cell, strong	*Noctuinæ.*
b^7. Hind wing with vein 5 from well above angle of cell, rather weak.....	*Erastrianæ.*
b^1. Hind wing with vein 5 parallel to 4	*Hypeninæ.*
B. Maxillary palpi present	*Hyblæinæ.*

The names adopted for the subfamilies are derived from the following genera:—

Agrotis, Treit., 1825,	type *rectangula.*
Hadena, Schranck, 1802,	,, *reticulata.*
Cucullia, Treit., 1826,	,, *spectabilis.*
Acronycta, Treit., 1825,	,, *leporina.*
Eutelia, Hübn., 1827,	,, *adulatrix.*
Stictoptera, Guen., 1852,	,, *cucullioides.*
Sarrothripa, Curt., 1824,	,, *revayana.*
Acontia, Treit., 1826,	,, *malvæ.*
Catocala, Treit., 1826,	,, *fraxini.*
Moma, Hübn., 1827,	,, *ludifica.*
Plusia, Treit., 1826,	,, *deaurata.*
Noctua, Linn., 1758,	,, *striæ.*
Erastria, Treit., 1826,	,, *trabealis.*
Hypena, Schranck, 1802,	,, *proboscidalis.*
Hyblæa, Fabr., 1794,	,, *puera.*

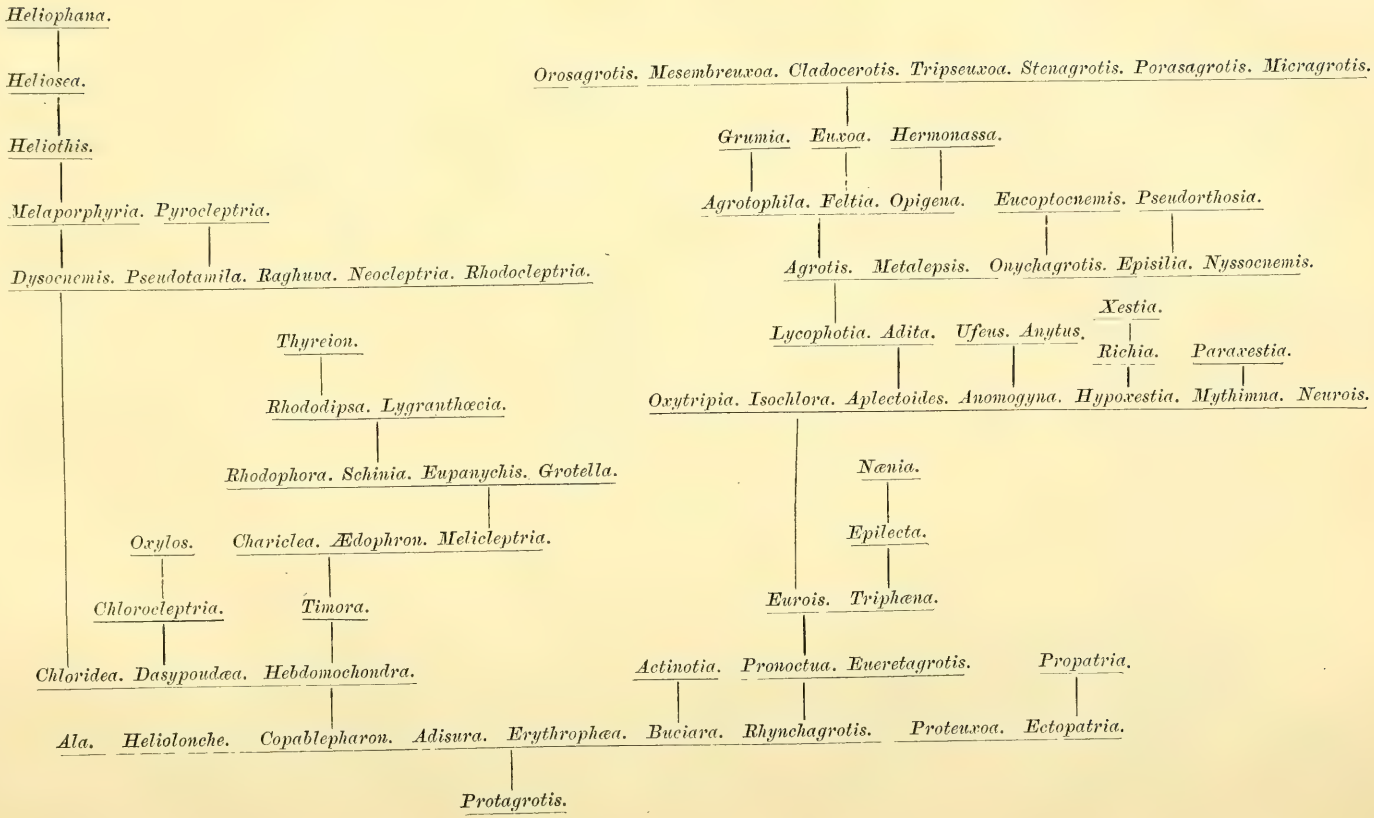
Subfamily AGROTINÆ.

Proboscis usually well developed, sometimes aborted; palpi usually short, upturned or porrect; frons rounded, often with rounded prominence, sometimes with corneous plate below it, or with corneous processes of various forms; eyes naked, sometimes overhung by cilia, in *Ala* hairy; antennæ usually ciliated, often pectinate or serrate; head and thorax clothed with hair and scales, when there are usually crests on pro- and metathorax or ridge-like dorsal crest, or clothed with hair only; tibiæ more or less spinose, all the tibiæ being sometimes strongly spined, in others the spines are reduced to one between mid and hind spurs of hind tibiæ; abdomen rarely with dorsal crests. Wings usually broad, sometimes rather narrow, the termen rounded or crenulate: fore wing with vein 1 *a* weak, not anastomosing with 1 *b*; 1 *c* absent; 2 from middle of cell; 3 and 5 from near lower angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole, 7 from the areole; 11 free, from the cell. Hind wing with veins 1 *a* and *b* present; 1 *c* absent; 3, 4 from lower angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle or shortly stalked; 8 arising free, then bent down and touching cell, then again diverging, in *Thyreion snowi* connected with cell at middle by an oblique bar after diverging.

Fig. 2.—Larva of *Agrotis deraiota*. ½.
(From Hmpsn. Ill. Het. ix. pl. 176. fig. 4.)

Larva smooth, the warts with 1 hair; all the prolegs present; the 12th somite with dorsal hump. In the *Heliothis* group the larvæ usually feed on flowers; in the *Agrotis* group they often hide in the earth by day and emerge to feed at night; the perfect insects of the former often flying in the sunshine, whilst the latter are purely nocturnal.

Phylogeny of Agrotinæ.



Key to the Genera.

A. Fore tibiæ with spines or claws.
  a. Frons with prominence.
    a^1. Frontal prominence with apical corneous wall and central process hollowed out in front . — Grotella, p. 96.
    b^1. Frontal prominence rounded in front.
      a^2. Frons with corneous ridge across the prominence ..... — Neocleptria, p. 32.
      b^2. Frons without corneous ridge across the prominence.
        a^3. Eyes small, reniform.
          a^4. Frons with corneous plate below the prominence.
            a^5. Fore tibiæ with several outer claws.
              a^6. Fore tibiæ with two inner claws ..... — Heliophana, p. 13.
              b^6. Fore tibiæ with one inner claw..... — Heliosea, p. 15.
            b^5. Fore tibiæ with one outer claw.
              a^6. Thorax clothed with hair only .... — Heliothis, p. 15.
              b^6. Thorax clothed with hair and scales... — Pyrocleptria, p. 25.
          b^4. Frons without corneous plate below the prominence.
            a^5. Fore tibiæ short and broad, with stout claw on inner side and short claw on outer..... — Pseudotamila, p. 27.
            b^5. Fore tibiæ normal, with slender apical claws ..... — Melaporphyria, p. 22.
            c^5. Fore tibiæ with spines only..... — Dysocnemis, p. 23.
        b^3. Eyes large, rounded.
          a^4. Frons with corneous plate below the prominence.
            a^5. Fore tibiæ with several outer claws.
              a^6. Fore tibiæ with two inner claws ..... — Lygranthœcia, p. 60.
              b^6. Fore tibiæ with one inner claw.
                a^7. Thorax clothed with hair only ..... — Thyreion, p. 57.
                b^7. Thorax clothed with hair and scales.
                  a^8. Head and thorax clothed with rough hair mixed with a few scales ..... — Rhodopipsa, p. 59.
                  b^8. Head and thorax smoothly clothed with hair and scales ..... — Schinia, p. 72.
            b^5. Fore tibiæ with one outer claw.
              a^6. Fore tibiæ spined at sides.
                a^7. Head and thorax smoothly clothed with hair only ..... — Rhodophora, p. 55.
                b^7. Head and thorax clothed with rough hair and scales..... — Eupanychis, p. 94.
                c^7. Head and thorax smoothly clothed with hair and scales ..... — Melicleptria, p. 97.
              b^6. Fore tibiæ not spined at sides.
                a^7. Head and thorax clothed with hair only.
                  a^8. Fore tibiæ short and broad, with inner claw.
                    a^9. Thorax with crest; tibiæ very slightly spined..... — Chariclea, p. 52.
                    b^9. Thorax without crest; tibiæ strongly spined ..... — Rhodocleptria, p. 33.
                  b^8. Fore tibiæ normal, without inner claw, one claw on outer side and one on 1st joint of tarsus ..... — Ædophron, p. 54.

b^7. Head and thorax clothed with hair and scales.
a^8. Fore wing rather short and broad, the apex rounded ..... RAGHUVA, p. 29.
b^8. Fore wing rather long and narrow, the apex somewhat produced ..... TIMORA, p. 103.
c^5. Fore tibiæ without outer claw..... HEBDOMOCHONDRA, p. 117.
b^4. Frons without corneous plate below the prominence.
a^5. Fore tibiæ with two claws on inner side .... OXYLOS, p. 49.
b^5. Fore tibiæ with one claw on inner side.
a^6. Fore tibiæ with three claws on outer side ..... CHLOROCLEPTRIA, p. 50.
b^6. Fore tibiæ with one claw on outer side.
a^7. Fore tibiæ short and broad, with stout claw on inner side and short claw on outer ..... DASYPOUDÆA, p. 51.
b^7. Fore tibiæ normal, with slender apical claws ..... CHLORIDEA, p. 34.
c^5. Fore tibiæ with spines only ..... COPABLEPHARON, p. 118.
c^1. Frons with truncate conical prominence.
a^2. Eyes small and reniform ..... OROSAGROTIS, p. 135.
b^2. Eyes large and rounded.
a^3. Frontal prominence with central flat corneous process ..... MESEMBREUXOA, p. 137.
b^3. Frontal prominence without corneous process.
a^4. Fore tibiæ short, with three long claws on inner side at extremity and short claw on outer ..... MICRAGROTIS, p. 148.
b^4. Fore tibiæ short, with long curved claw on inner side and short claw on outer . CLADOCEROTIS, p. 138.
c^4. Fore tibiæ with the spines at extremity very stout ..... POROSAGROTIS, p. 140.
d^4. Fore tibiæ with the spines at extremity slender.
a^5. Proboscis aborted, minute ..... TRIPSEUXOA, p. 139.
b^5. Proboscis fully developed
a^6. Eyes ciliated ..... STENAGROTIS, p. 139.
b^6. Eyes not ciliated..... EUXOA, p. 153.
d^1. Frons with vertical ridge ..... FELTIA, p. 337.
e^1. Frons with slightly roughened prominences. PSEUDORTHOSIA, p. 466.
b. Frons without prominence.
a^1. Eyes small, reniform.
a^2. Fore tibiæ with long curved claw on inner side and short claw on outer ..... HELIOLONCHE, p. 12.
b^2. Fore tibiæ spined.
a^3. Fore wing with the apex rectangular; antennæ of male pectinate .... GRUMIA, p. 130.
b^3. Fore wing with the apex rounded; antennæ of male not pectinate ..... AGROTOPHILA, p. 131.
b^1. Eyes large, rounded.
a^2. Eyes strongly ciliated..... METALEPSIS, p. 462.
b^2. Eyes not ciliated.
a^3. Head and thorax clothed with hair only.
a^4. Prothorax with ridge-like crest, metathorax with slight crest ..... XESTIA, p. 593.
b^4. Thorax without crests.
a^5. Fore tibiæ short and broad, with long curved claw on inner side and short claw on outer .. .. EUCOPTOCNEMIS, p. 463.

b^5 Fore tibiæ normal.
a^6. Fore tibiæ with long curved claw on inner side and six claws on outer ... ERYTHROPHÆA, p. 122.
b^6. Fore tibiæ without claws ..... EPISILIA, p. 467.
b^3. Head and thorax clothed with hair and scales and with more or less developed thoracic crests.
a^4. Prothorax with ridge-like crest..... RICHIA, p. 595.
b^4. Prothorax with spreading crest.
a^5. Fore tibiæ short and broad, with two claws on inner side and seven claws on outer ..... ONYCHAGROTIS, p. 465.
b^5. Fore tibiæ with long curved claw on inner side, without spines or claws on outer..... ADITA, p. 579.
c^4. Fore tibiæ spined at sides.
a^6. Abdomen dorsally rather flattened.
a^7. Fore wing narrow, the margins subparallel.
a^8. Palpi with tuft of hair in front of 3rd joint..... OPIGENA, p. 362.
b^8. Palpi with the 3rd joint naked..... HERMONASSA, p. 357.
b^7. Fore wing broad, triangular ..... AGROTIS, p. 363.
b^6. Abdomen not dorsally flattened.
a^7. Fore tibiæ strongly spined.
a^8. Thorax thickly clothed with rough hair and scales ..... NYSSOCNEMIS, p. 513.
b^8. Thorax smoothly scaled..... LYCOPHOTIA, p. 514.
b^7. Fore tibiæ slightly spined on inner side only ..... APLECTOIDES, p. 580.

B. Fore tibiæ without spines or claws.
a. Eyes hairy..... ALA, p. 10.
b. Eyes not hairy.
a^1. Eyes small, reniform ..... OXYTRIPIA, p. 127.
b^1. Eyes large, rounded.
a^2. Frons with rounded prominence, with corneous plate below it..... ADISURA, p. 119.
b^2. Frons with large truncate conical prominence, with raised rim at extremity ..... PROPATRIA, p. 651.
c^2. Frons with vertical ridge ..... ECTOPATRIA, p. 652.
d^2. Frons obliquely rounded, with slight roughened prominence at extremity ..... NEUROIS, p. 610.
e^2. Frons smooth.
a^3. Mid tibiæ spined.
a^4. Eyes ciliated, thorax clothed with hair only.
a^5. Palpi long, upturned, the 3rd joint porrect ..... PARAXESTIA, p. 601.
b^5. Palpi short, oblique.
a^6. Abdomen dorsally flattened ..... UFEUS, p. 583.
b^6. Abdomen not dorsally flattened ..... ISOCHLORA, p. 128.
b^4. Eyes not ciliated.
a^5. Head and thorax clothed with hair only. MYTHIMNA, p. 602.
b^5. Head and thorax clothed with hair and scales.
a^6. Abdomen dorsally flattened.
a^7. Palpi with the 3rd joint long and naked.
a^8. Palpi with the 3rd joint upturned, the 2nd with long pointed tuft at extremity..... NÆNIA, p. 618.

b^8. Palpi with the 3rd joint porrect, the 2nd moderately fringed with hair in front ..... Epilecta, p. 620.
b^7. Palpi with the 3rd joint short and slightly hairy below ..... Tripiläna, p. 622.
b^6. Abdomen not dorsally flattened.
a^7. Abdomen with slight dorsal crests towards base.
a^8. Fore wing with the termen crenulate ..... Anytus, p. 585.
b^8. Fore wing with the termen non-crenulate ..... Actinotia, p. 122.
b^7. Abdomen without dorsal crests.
a^8. Thorax with ridge-like dorsal crest. Hypoxestia, p. 600.
b^8. Thorax with spreading crests.
a^9. Palpi with the 3rd joint porrect and hairy below, the 2nd broadly scaled in front.
a^{10}. Thorax with distinct crests on pro- and mesothorax.
a^{11}. Head and thorax clothed with rough spatulate hair ..... Anomogyna, p. 588.
b^{11}. Head and thorax smoothly clothed with hair and scales . Eurois, p. 612.
b^{10}. Thorax with very slight dorsal crests ..... Pronoctua, p. 641.
b^9. Palpi with the 3rd joint upturned, almost naked.
a^{10}. Palpi with the 2nd joint broadly fringed with hair in front..... Eueretagrotis, p. 643.
b^{10}. Palpi with the 2nd joint slightly fringed with hair in front ... Rhynchagrotis, p. 648.
b^3. Mid tibiæ not spined.
a^4. Abdomen with dorsal crests ..... Buciara, p. 126.
b^4. Abdomen without dorsal crests.
a^5. Head and thorax clothed with rough hair and spatulate scales ..... Proteuxoa, p. 649.
b^5. Head and thorax smoothly scaled ..... Protagrotis, p. 655.

Genus **ALA**.

	Type.
Ala, Staud. Stett. ent. Zeit. 1882, p. 49	*picteti.*
Trichanarta, Hmpsn. Moths Ind. iv. p. 507 (1896)	*ladacensis.*

Proboscis fully developed; palpi porrect, extending more than the length of head, fringed with long hair below, the 3rd joint acuminate, well developed; eyes hairy; antennæ ciliated; frons with large tuft of hair; head and thorax clothed with long rough hair mixed with scales; mid and hind tibiæ strongly spined. Fore wing with vein 3 from before angle of cell; 5 from above angle; 6 from below upper angle; 9 from 10 anastomosing with 8 to form the areole. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle or shortly stalked.

Sect. I. (*Ala*). Antennæ of male minutely serrate and fasciculate.
A. Fore wing with the reniform placed on a medial dark shade..... *picteti.*
B. Fore wing without medial dark shade ..... *pretiosa.*

1. Ala picteti.

Ala picteti, Staud. Stett. ent. Zeit. 1882, p. 49; Alph. Hor. Soc. Ent. Ross. xvii. p. 89, pl. 3. f. 61; Staud. Cat. Lep. pal. p. 220.

♂. Head and thorax black-brown mixed with grey; abdomen black with some grey hairs. Fore wing brown, almost entirely suffused with grey but leaving the inner margin dark; a curved dark subbasal line from costa to submedian fold; the antemedial line curved, with the more or less developed black-brown claviform on its outer edge and sometimes also a small elliptical grey-centred orbicular stigma; reniform with greyish centre defined by black-brown, its inner edge angled inwards on median nervure, placed on a distinct

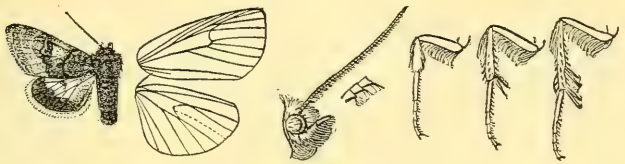


Fig. 3.—*Ala picteti*, ♂. ½.

brown medial shade; postmedial line indistinct, grey, oblique from costa to vein 6 where it is angled, incurved below vein 4; subterminal line grey, slightly defined by brown on inner side and the area beyond it rather browner, minutely waved, angled inwards below costa and in submedian fold, slightly incurved at discal fold; cilia whitish at tips. Hind wing white, irrorated with fuscous especially towards base; veins and a discoidal lunule fuscous; the inner area and a broad terminal band fuscous black, the latter with its inner edge sometimes incurved at discal fold; cilia white. Underside white irrorated with fuscous, both wings with dark discoidal lunule and broad terminal band.

Hab. W. Turkestan, Turcomania, 1 ♂, Ala Tau, Issyk-kul, 2 ♂; E. Turkestan, Kuldja, Korla. *Exp.* 26–28 millim.

*2. Ala pretiosa.

Ala pretiosa, Alph. Hor. Soc. Ent. Ross. xxvi. p. 453 (1892); id. Rom. Mém. ix. p. 38, pl. 3. f. 8; Staud. Cat. Lep. pal. p. 220.

Head, thorax, and abdomen black-brown mixed with olive and grey hair. Fore wing grey irrorated with olive, the basal, costal, and inner areas dark olive-brown; stigmata black-brown defined by whitish, the orbicular and claviform small, round, obliquely placed, the reniform large; the postmedial line excurved from costa to vein 4, then incurved, the area beyond it dark brown with a pale obliquely curved subterminal band with waved edges expanding towards costa. Hind wing white; the basal half suffused with fuscous; a dark discoidal lunule conioined to a streak from base

in submedian fold; the inner area and a broad terminal band fuscous black; cilia white.

Hab. Tibet, Nan Schan Mts., in Coll. Elwes. *Exp.* 26 millim.

Sect. II. (*Trichanarta*). Antennæ of male ciliated.

3. Ala ladacensis.

Anarta ladakensis, Feld. Reis. Nov. pl. 108. f. 38 (1874); Hmpsn. Moths Ind. iv. p. 508.

Dark brown mixed with black. Fore wing irrorated with black; a minutely waved antemedial line with the orbicular stigma, a spot below the cell and one on inner margin beyond it black; the reniform

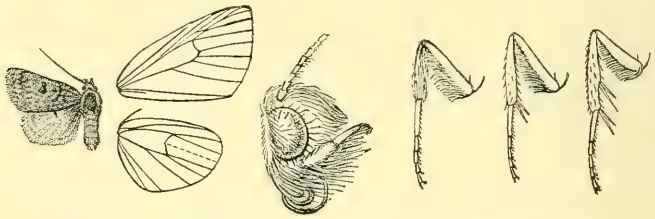


Fig. 4.—*Ala ladacensis*, ♂. ½. (From Moths Ind. vol. iv.)

large, black; a slightly curved and oblique, minutely waved postmedial line; a waved punctiform subterminal line and a terminal series of points. Hind wing pale yellow, the basal and inner areas suffused with black; a discoidal point sometimes present; a fuscous subterminal mark on apical area. Underside whitish; fore wing with the discoidal spot and subterminal band prominent.

Hab. Kashmir, Kardong, 14,000 ft. (*McArthur*), 1 ♂; Ladak, type † ♀ in Coll. Rothschild. *Exp.* 22 millim.

Genus **HELIOLONCHE**.

Type.

Heliolonche, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 115 (1873) ... *modicella*.

Proboscis fully developed; palpi porrect, extending about the length of head, the 2nd joint fringed with very long hair, the 3rd clothed with rough hair; head, thorax, and abdomen clothed with long rough hair; frons not prominent, with curved corneous plate below it; eyes smooth, narrow ovate; antennæ of male ciliated; tibiæ clothed with long hair; fore tibiæ short, broad, with long curved claw on inner side and short claw on outer; mid and hind tibiæ spined. Fore wing narrow, the apex produced, the termen obliquely curved; vein 3 from before angle of cell; 5 from above angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

4. Heliolonche modicella.

Heliolonche modicella, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 116, pl. 3. f. 12 (1873); Smith, Cat. Noct. N. Am. p. 289.

Head, thorax, and abdomen black mixed with ochreous-grey hairs. Fore wing purplish red, irrorated with black; some black and

ochreous hair at base of inner margin ; a dull ochreous mark in end of cell ; an obliquely curved dull ochreous band from below apex to vein 1 before middle, with blackish edges and attenuate at extremities ; cilia ochreous white, blackish at base. Hind wing black-brown,

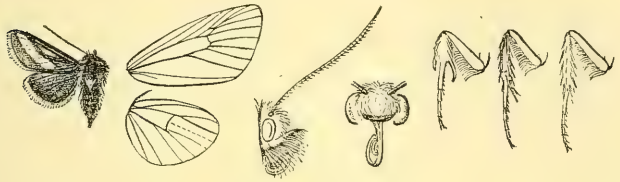


Fig. 5.—*Heliolonche modicella*, ♂. ½.

the cilia greyish ochreous, with their bases black ; the underside with the apical area grey.

Hab. U.S.A., Colorado, Oregon, The Dales (*Walsingham*), 2 ♂, California, 1 ♂, 4 ♀, Grote and Zeller Colls., type. *Exp.* 22 millim.

Genus **HELIOPHANA**.

	Type.
Heliophana, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 220 (1875)	*mitis*.

Proboscis fully developed ; palpi oblique to just beyond frons, fringed with hair below ; frons with rounded prominence, with curved corneous plate below it ; eyes small, reniform ; antennæ of male ciliated ; head and thorax clothed with rough hair ; fore tibiæ short and broad, with two curved claws on inner side and three claws and spines on outer ; mid and hind tibiæ spined. Fore wing rather narrow, the apex produced and the termen oblique ; veins 3 and 5 from near angle of cell ; 6 from upper angle ; 9 from 10 anastomosing with 7, 8 to form the short areole ; 11 from cell. Hind wing with veins 3, 4 from angle of cell ; 5 obsolescent from middle of discocellulars ; 6, 7 shortly stalked.

A. Hind wing with the base and two discal spots yellow ... *bina*.
B. Hind wing with white medial band ..... *amaryllis*.
C. Hind wing immaculate ..... *mitis*.

*5. Heliophana bina.

Anthœcia bina, Guen. Noct. ii. p. 186 (1852) ; Smith, Cat. Noct. N. Am. p. 290.

♂. Fore wing vinous red, variegated with brown and olive-yellow, the latter principally on terminal area, the former on basal and medial areas ; ante- and postmedial lines very indistinct, with more prominent white points on costa. Hind wing black, the base and two discal spots yellow ; cilia yellow. Underside black, pale yellow, and red-brown, the subterminal band of hind wing entire.

♀ darker and redder.

Hab. U.S.A., New York, Nebraska. *Exp.* 23 millim. This species is unknown to me.

*6. Heliophana amaryllis. (Plate LIX. fig. 1.)

Heliophana amaryllis, Smith, Trans. Am. Ent. Soc. xviii. p. 130 (1891); id. Cat. Noct. N. Am. p. 290.

Head, thorax, and abdomen black, clothed with sparse pale yellowish hair. Fore wing dirty greyish brown, the medial area dirty yellowish white; subbasal line whitish defined by black; antemedial line whitish, defined on inner side by black, on outer by a grey shade, slightly incurved in cell and angled outwards on median nervure; orbicular and reniform black, the former round, touching the antemedial line, the latter large; a slight medial shade from lower angle of cell to inner margin; postmedial line whitish, defined on inner side by a grey-brown line, on outer by the dark terminal area, bent outwards below costa, excurved to vein 4, then incurved; subterminal line whitish, angled inwards below costa and in discal and submedian folds, excurved above and below middle; veins of terminal area and cilia streaked with whitish. Hind wing black, with whitish medial band almost divided at lower angle of cell by the large black discoidal spot; cilia whitish at tips. Underside of fore wing white with black fascia below base of cell, large black orbicular, reniform, and subapical spots, an irregular black terminal band; hind wing with the medial band broader than above.

Hab. U.S.A., California, Colton. *Exp.* 20 millim. This species is unknown to me: figured from a photograph from type in U.S. Nat. Mus.

7. Heliophana mitis.

Melicleptria mitis, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 116, pl. 3. f. 7 (1873); Smith, Cat. Noct. N. Am. p. 290.
Heliophana obliquata, Smith, Trans. Am. Ent. Soc. xviii. p. 130 (1891).

♂. Head and thorax fulvous yellow; abdomen black, with fulvous segmental lines and the extremity fulvous. Fore wing ochreous, with rufous markings irrorated with black; a diffused band from

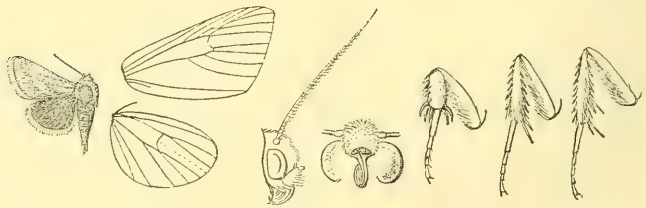


Fig. 6.—*Heliophana mitis*, ♂. ½.

costa beyond middle to base of inner margin; an obliquely curved band from costa before apex to middle of inner margin; a terminal line. Hind wing black-brown, with the cilia pale yellow. Underside of both wings fuscous black, the costal and apical areas yellowish.

Hab. U.S.A., Texas, 1 ♂ type, Mississippi. *Exp.* 20 millim.

Genus **HELIOSEA**.

	Type.
Heliosea, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 220 (1875)	*pictipennis*.

Proboscis fully developed; palpi oblique to beyond frons, fringed with hair below; frons with rounded prominence, with curved corneous plate below it; eyes small, reniform; antennæ of male ciliated; head and thorax clothed with rough hair; fore tibiæ spined, with curved claw on inner side and three claws on outer; mid and hind tibiæ spined. Fore wing rather narrow, the apex produced, the termen oblique; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell short; veins 3, 4 shortly stalked; 5 obsolescent from middle of discocellulars; 6, 7 stalked.

The unique type is without head and fore legs, and the description is supplied from that of Mr. Grote.

8. Heliosea pictipennis.

Heliosea pictipennis, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 220 (1875); id. Ill. Essay, 62, pl. iii. f. 32; Smith, Cat. Noct. N. Am. p. 289.

♂. Head and thorax pale ochreous; abdomen black, with some hair at base and the extremity yellowish white. Fore wing ochreous; the basal area suffused with crimson to the obliquely curved crimson antemedial line; the costal area suffused with crimson to the crimson postmedial line, which is slightly excurved to vein 4, then

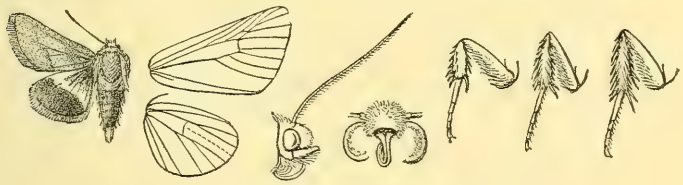


Fig. 7.—*Heliosea pictipennis*, ♂. ¾.

incurved; termen and cilia suffused with crimson. Hind wing black, with white medial band expanding to base on costa and not quite reaching inner margin; cilia white at tips. Underside white; fore wing with some diffused black at base, and a diffused postmedial band from vein 5 to inner margin; hind wing with black patch at base, extending on inner area to middle, the terminal area black from vein 4 to tornus.

Hab. U.S.A., California, 1 ♂ type. *Exp.* 18 millim.

Genus **HELIOTHIS**.

	Type.
Heliothis, Ochs. Schmett. Eur. iv. p. 91 (1816), non descr.; Treit. Schmett. Eur. v. 3, p. 215 (1826)	*cardui*.
Anthœcia, Boisd. Gen. et Ind. Meth. p. 162 (1840)	*cognata*.
Trypana, Guen. Ann. Soc. Ent. Fr. x. p. 58 (1841)	*cardui*.
Adonisea, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 220 (1875)...	*pulchripennis*.
Canidia, Grote, Revised Check-list, p. 36 (1890), non descr..	*scissa*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with hair in front; frons with rounded prominence, with curved corneous plate below it; eyes small, reniform; antennæ of male minutely ciliated; head and thorax clothed with rough hair; fore tibiæ short, broad, spined at sides and with long curved claw on inner side and short claw, rarely three claws, on outer; mid and hind tibiæ strongly spined. Fore wing rather narrow, the apex produced, the termen oblique; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell very short; veins 3, 4 strongly stalked; 5 obsolescent from middle of discocellulars; 6, 7 strongly stalked.

A. Hind wing blood-red ..... *celeris.*
B. Hind wing yellow, with large black discoidal spot.
  a. Fore wing deep purple ..... *græfiana.*
  b. Fore wing black, suffused with rufous ..... *scissa.*
C. Hind wing black, with indistinct ochreous medial band... *chansyi.*
D. Hind wing black, with prominent whitish medial band or spots.
  a. Hind wing with the medial band entire.
    a^1. Hind wing with the medial band reaching costa and inner margin..... *cognata.*
    b^1. Hind wing with the medial band not reaching costa and inner margin..... *cardui.*
    c^1. Hind wing with the band reduced to a medial patch. *pulchripennis.*
  b. Hind wing with the band divided entirely or almost entirely into two spots.
    a^1. Fore wing with the basal area and postmedial band purple.
      a^2. Fore wing with the medial band almost entirely suffused with grey-green..... *imperialis.*
      b^2. Fore wing with the medial band not suffused with grey-green.
        a^3. Hind wing with the costa on underside not white at base ..... *purpurascens.*
        b^3. Hind wing with the costa on underside white at base ..... *villosa* ab.
    b^1. Fore wing with the basal area and postmedial band not purple.
      a^2. Fore wing with the reniform stigma ill-defined... *villosa.*
      b^2. Fore wing with the reniform stigma prominently defined by whitish.
        a^3. Fore wing with the orbicular stigma ill-defined.
          a^4. Fore wing with whitish antemedial, postmedial, and subterminal lines..... *vacciniæ.*
          b^4. Fore wing without lines..... *sueta.*
        b^3. Fore wing with the orbicular stigma prominently defined by whitish ..... *honesta.*

*9. Heliothis celeris. (Plate LIX. fig. 3.)

Melicleptria celeris, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 148 (1873); Smith, Cat. Noct. N. Am. p. 288.

♂. Head and thorax black, clothed with olivaceous hair; pectus and legs ochreous; abdomen black, with the anal tuft and ventral surface ochreous. Fore wing deep purple, with the medial and terminal areas tinged with olivaceous; orbicular and reniform very indistinct, the latter defined by whitish and with a more prominent patch below median nervure forming a Y-shaped band; cilia

purple. Hind wing deep blood-red, with traces of a paler band near base; cilia pale. Underside deep blood-red, with the costal edge and cilia purple; hind wing with a faint pale band near base.

Hab. U.S.A., S. California, Yosemite (*Godman*) in Coll. Elwes. *Exp.* 17 millim.

10. **Heliothis scissa.** (Plate LV. fig. 5.)

Lygranthœcia scissa, Grote, Proc. Bost. Soc. N. H. xviii. p. 415 (1876) Smith, Cat. Noct. N. Am. p. 285.

♂. Head black with some grey hair; antennæ and thorax rufous mixed with black; abdomen black with whitish segmental lines, the anal tuft ochreous, the ventral surface with grey and vinous hair. Fore wing blackish overlaid with rufous hair; an oblique whitish triangular mark from middle of costa to vein 2; the reniform small, oblique, black with some white hair on it; the postmedial line indistinct, excurved from costa to vein 4, then incurved; terminal area tinged with grey. Hind wing black, with large yellow patch, in, beyond, and below the cell, terminating in a point on vein 1, its outer edge produced to a point in discal fold and with a large oblique black discoidal spot on it. Underside of fore wing with broad yellow medial band, not quite reaching costa, constricted below the cell and with the black reniform spot on it; hind wing with the costal and apical areas suffused with red, the yellow band reaching inner margin.

Hab. U.S.A., Florida, 1 ♂ type. *Exp.* 22 millim.

*11. **Heliothis græfiana.** (Plate LIX. fig. 4.)

Melicleptria græfiana, Tepper, Trans. Am. Ent. Soc. x. p. 245 (1883); Smith, Cat. Noct. N. Am. p. 288.

♀. Fore wing rather pale vinous red; an obliquely curved yellow antemedial line, orbicular and reniform large, defined by the ante- and postmedial lines and by yellow between and below them; postmedial line excurved from costa to vein 4, then incurved, its inner side produced to a point in discal fold; termen pale grey. Hind wing yellow, with the margins black; a large black discoidal spot.

Hab. U.S.A., S. California. *Exp.* 22 millim. This species is unknown to me; figured from Prof. Smith's figure.

*12. **Heliothis chansyi.**

Anthœcia chansyi, Oberth. Ét. Ent. i. p. 51, pl. 2. ff. 4 *a*, *b* (1876); Staud. Cat. Lep. pal. p. 221.

♂. Head and thorax pale tinged with vinous red; abdomen blackish, with ochreous segmental bands. Fore wing vinous red, with broad oblique pale ochreous medial band, its outer edge slightly excurved from costa to submedian fold, where it is somewhat angled inwards; terminal area pinkish white, with the veins rather darker. Hind wing dull black, with obscure ochreous medial band; cilia

ochreous. Underside of fore wing black-brown, with the costa, apex, and a transverse band ochreous; hind wing silvery grey, with very indistinct medial band.

♀. Head and thorax tinged with greenish; fore wing with the inner edge of medial band angled outwards to lower angle of cell, the terminal area wholly green except an apical ochreous spot.

Hab. Algeria, Bou-Sâada, type † in Coll. Oberthur. *Exp.* 20 millim.

13. Heliothis cognata.

Noctua cognata, Frr. Beitr. iii. p. 134, pl. 135. f. 3 (1830); Hübn. Schmett. Eur. iii. f. 828; Herr.-Schäff. Eur. Schmett. ff. 550, 551; Staud. Cat. Lep. pal. p. 221.

Head and thorax black, clothed with pale olive-brown hair; abdomen black with pale segmental rings, the anal tuft and ventral surface pale olive-brown. Fore wing black, overlaid with rufous scales; a curved whitish antemedial line; the postmedial line slightly angled below costa, then oblique, the area between the two lines whitish tinged with brown towards costa and inner margin, forming a whitish band enclosing the small dark reniform stigma; a narrow pale terminal band with dark streaks on the veins, its inner edge angled inwards in discal and submedian folds. Hind wing black, with white medial band reaching inner margin and with irregular edges; cilia white. Underside of fore wing black, with the white band extending on inner area to base; reniform black; apical area and a spot above tornus whitish tinged with rufous; hind wing with some rufous on inner side of medial band at costa and on apical area.

Hab. Austria; Hungary, Zeller and Frey Colls.; Eastern Europe; Asia Minor, Lydia, Pontus. *Exp.* 22 millim.

14. Heliothis cardui.

Noctua cardui, Esp. Schmett. iv. pl. 191. ff. 2, 3 (1786); Hübn. Beitr. ii. pt. 4, pl. 1. f. B; id. Eur. Schmett., Noct. f. 313; Dup. Hist. Nat. Lép. Fr. vii. pt. 1, p. 311, pl. 119. f. 4; Staud. Cat. Lep. pal. p. 221.
Heliothis cardui, var. *purpurata*, Staud. Cat. Lep. pal. p. 221 (1901).

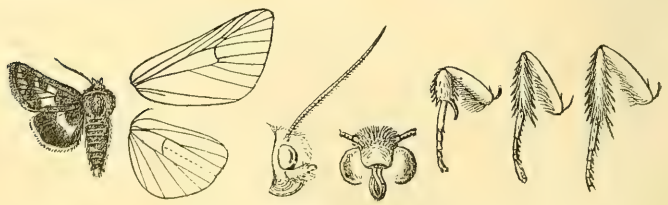


Fig. 8.—*Heliothis cardui*, ♂. ½.

Head and thorax black, clothed with pale olive-brown hair; abdomen black with pale segmental lines, the anal tuft and ventral surface pale olive-brown. Fore wing black overlaid with rufous

scales; a whitish spot in end of cell conjoined below cell to a band from costa beyond middle and forming a Y-shaped band with arms on each side of the reniform; a pale terminal band traversed by dark streaks on the veins, its inner edge angled inwards in discal and submedian folds. Hind wing black, with white medial band with waved edges not reaching inner margin; cilia white. Underside of fore wing black, with the white band produced to base on inner area, the apical area ochreous white; hind wing with the costal area ochreous white.

Ab. 1. *purpurata*. Fore wing more or less suffused with purple.

Hab. FRANCE; GERMANY, Zeller Coll.; SWITZERLAND; SPAIN; ITALY; HUNGARY, Frey Coll.; EASTERN EUROPE; ARMENIA; ASIA MINOR, Pontus. *Exp.* 22 millim.

15. Heliothis pulchripennis. (Plate LV. fig. 1.)

Melicleptria pulchripennis, Grote, Proc. Bost. Soc. N. H. xvi. p. 241 (1874); id. Ill. Essay, 62, pl. iii. f. 31; Smith, Cat. Noct. N. Am. p. 288.
Adonisea languida, H. Edw. Pap. i. p. 20 (1881).

Head, thorax, and abdomen black with grey hair, the head and thorax more or less strongly tinged with purplish crimson; legs with pink hair. Fore wing grey-brown, more or less completely suffused with purplish crimson; a curved silvery-blue antemedial line; a similar postmedial line slightly excurved to vein 4, then slightly incurved, the area between the lines not suffused with crimson except towards costa and inner margin and on the reniform stigma, which often has an ochreous white spot before it and large patch beyond it; a terminal band of the ground-colour with sinuous inner edges, often more or less suffused with crimson. Hind wing black; the costal area ochreous white to near apex, and a somewhat wedge-shaped patch beyond the cell between veins 6 and 2. Underside of both wings greenish grey, the basal area and discoidal spot black, the costal and terminal areas crimson.

Ab. 1. *languida*. The crimson suffusion much reduced.

Hab. U.S.A., Colorado, California, 6 ♂, 1 ♀, Grote Coll. *Exp.* 24–28 millim.

16. Heliothis imperialis.

Heliothis imperialis, Staud. Cat. Lep. Eur. p. 129 (1871); id. Rom. Mém. ii. p. 69, pl. 4. f. 4 *a*, *c*; Staud. Cat. Lep. pal. p. 221.

♂. Head, thorax, and abdomen black, clothed with grey-green hair; tips of tegulæ, meso- and metathorax deep purple; pectus and legs white. Fore wing black; the basal area deep purple; a grey-green medial band slightly angled outwards below costa, then constricted, and with a small white spot in the cell on its inner edge; the subterminal line slightly angled outwards at vein 7 and bent outwards to tornus, defined by the area beyond it being grey-green often tinged with purple. Hind wing black; white spots just beyond and below end of cell, often conjoined; cilia white at

tips. Underside yellowish white; fore wing with black streak below base of cell, orbicular and reniform black, terminal area black except at apex; hind wing with black patch on basal inner area conjoined to a discoidal spot and diffused patch near tornus.

Hab. Armenia, Caucasus, 5 ♂. *Exp.* 26–30 millim.

Larva. Brownish white, paler below; head and 1st somite above tinged with orange; dorsal, subdorsal, lateral and sublateral interrupted narrow dark lines. Food-plant, the capsules of *Cephelaria procera.*

17. Heliothis purpurascens.

Noctua purpurascens, Tausch, Mém. Mosc. 1809, p. 319, pl. 20. f. 4; Mill. Ic. iii. pl. 128. ff. 5–7; Staud. Cat. Lep. pal. p. 221.
Heliothis pulchra, Ev. Bull. Mosc. 1842, iii. p. 554, pl. v. f. 8; Herr. Schäff. Schmett. Eur. ff. 217–8.

Head, thorax, and abdomen black, clothed with grey hair; patagia tinged with purple at extremity. Fore wing black overlaid by purple hair; a whitish spot at base; a whitish Y-shaped medial band enclosing the greyish reniform stigma, with some purple on it at costa and inner margin; a diffused grey subterminal straight line. Hind wing black, with white spots just beyond and below end of cell, often conjoined; cilia white. Underside of fore wing black, the medial band extending to base on inner area, an apical white patch; hind wing with medial white band, the apical half of costal area black, extending on termen to vein 2.

Hab. S.E. Russia, Sarepta (*Christoph*), 9 ♂, 3 ♀, Urals, 1 ♀; Asia Minor, Pontus; Tibet, Kuku Noor. *Exp.* 26 millim.

Larva. Mill. Icon. iii. p. 247, pl. 128. ff. 5–7.

Pale yellow, the ventral surface greyer; head and first and last somites orange; dorsal, subdorsal, lateral and sublateral series of black points. Food-plant, the capsules of *Cephelaria tartarica.*

18. Heliothis villosa. (Plate LV. fig. 2.)

Melicleptria villosa, Grote, Proc. Ent. Soc. Phil. iii. p. 531, pl. vi. f. 6 (1864); Smith, Cat. Noct. N. Am. p. 288.
Heliothis pauxillus, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 118, pl. iii. f. 6 (1873).
Heliothis persimilis, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 117, pl. iii. f. 11 (1873).

♂. Head, thorax, and abdomen black with some grey hair; pectus, legs, and ventral surface of abdomen whitish. Fore wing black, overlaid with grey and pale rufous scales; traces of a pale curved antemedial line with an elliptical whitish spot beyond it in the cell; a pale postmedial line excurved from costa to vein 4, then incurved; a somewhat greyer terminal band. Hind wing black-brown, with small white spot in end of cell and rather larger spots beyond and below its extremity; cilia white at tips. Underside black; fore wing with white spots before and beyond the reniform, a white patch on middle of inner area, and some grey at

apex; hind wing with the costal area whitish except towards base, conjoined to spots before and beyond the discoidal black spot and to an apical patch extending to vein 2, a spot below end of cell.

♀. Fore wing with white spot in cell before the orbicular stigma; a **Y**-shaped band on medial area not reaching costa or inner margin; hind wing with the spots larger.

Ab. 1. Fore wing with the basal and postmedial areas bright purple-pink, and with small whitish spots in cell of both wings before middle, the reniform strongly defined.—Colorado, Bullion Mt.

Hab. U.S.A., Colorado, 1 ♂, California, 1 ♀ type *persimilis*, New Mexico, Beulah (*Cockerell*), 1 ♀. *Exp.* 22 millim.

*19. Heliothis vacciniæ.

Melicleptria vacciniæ, H. Edw. Proc. Cal. Ac. Sci. vi. p. 134 (1875); Smith, Cat. Noct. N. Am. p. 289.

Head and thorax brown; abdomen black-brown, with segmental whitish lines. Fore wing pale brown with a golden tinge; the basal area darker; antemedial line moderately curved, slightly dentate towards inner margin; medial shade whitish, brown towards costa; orbicular nearly obsolete; reniform large, prominent; postmedial line whitish, bent outwards below costa, nearly straight towards inner margin; subterminal line prominently dentate at middle and with four or five short black streaks from it; cilia golden brown with darker patches. Hind wing black, with medial white band broadest below middle, but not reaching inner margin; a short white subterminal striga; cilia white. Underside of fore wing black, reddish towards costa, and with broad creamy-white medial band, a reniform subapical spot, and irregular terminal band; hind wing black, with reddish-white subcostal patch, an oblong creamy-white discal spot with small spot below it.

Hab. U.S.A., California, Sierra Nevada. *Exp.* 18 millim. This species is unknown to me.

20. Heliothis sueta. (Plate LV. fig. 4.)

Heliothis suetus, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 117, pl. iii. f. 10 (1873); Smith, Cat. Noct. N. Am. p. 289.
Heliothis californicus, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 149 (1873).

♂. Head, thorax, and abdomen black with some grey hair; pectus, legs, and abdomen with whitish hair. Fore wing black, overlaid by grey and purplish-red scales; a somewhat **X**-shaped medial whitish band formed by spots before and beyond the reniform, conjoined to a quadrate spot below the cell between the indistinct whitish curved antemedial line and the postmedial line, which is excurved from costa to vein 4, then strongly incurved. Hind wing black, with large whitish spot beyond the cell and somewhat quadrate spot below its extremity; cilia white at tips. Underside of fore wing with the white band and black reniform spot very prominent, the apical area suffused with white; hind wing with

the costal area white from near base, conjoined to a small spot in cell, the large spots beyond and below its extremity, and the white apical area which extends down to vein 2.

Fore tibiæ with three claws on outer side.

Hab. U.S.A., Colorado, California, 2 ♂ type *californicus*. *Exp.* 30 millim.

*21. **Heliothis honesta.** (Plate LV. fig. 3.)

Melicleptria honesta, Grote, Pap. i. p. 77 (1881); Smith, Cat. Noct. N. Am. p. 289.

♀. Black; head, thorax, and abdomen with some grey-white hair; pectus, legs, extremity and ventral surface of abdomen mostly white. Fore wing irrorated with pale olive-brown scales; the cell with white patches before and beyond the orbicular, confluent with the postmedial white band which is excurved from costa to vein 4, then incurved in submedian fold and not extending below vein 1; a maculate white subterminal band, angled inwards in discal fold and at vein 2 and not reaching tornus; cilia chequered with white. Hind wing with white band just beyond middle from vein 6 to just above inner margin, its inner edge indented at lower angle of cell, then angled inwards below cell; cilia white. Underside of fore wing with the basal costal area white and confluent with the medial band, the whole terminal area white; hind wing white, with black discoidal lunule, patch on middle of inner area, and two patches towards tornus.

Hab. U.S.A., Oregon, Mt. Hood, Mt. Tallac, in Coll. Schaus. *Exp.* 28 millim.

Genus **MELAPORPHYRIA.**

Type.

Melaporphyria, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 75 (1874)... *immortua*.

Proboscis fully developed; palpi porrect, short, clothed with rough hair; head and thorax clothed with rough hair, frons with rounded prominence; eyes small, reniform; antennæ of male ciliated; fore tibiæ spined at sides, with long slender claw on inner side and short claw on outer; mid and hind tibiæ spined. Fore wing with veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

22. **Melaporphyria immortua.**

Melaporphyria immortua, Grote, Bull. Buff. Soc. Nat. Sci. ii. pp. 75, 220 (1874); Smith, Cat. Noct. N. Am. p. 287.

♂. Head and thorax black-brown mixed with ochreous and rufous hair; abdomen black-brown with pale segmental lines. Fore wing blackish, suffused with purple to the postmedial line except on inner margin; the veins grey to the subterminal line; the antemedial line grey, highly curved and very oblique towards costa and inner margin, with a diffused black band on its inner side; traces of a blackish discoidal mark; the postmedial line grey, oblique

and slightly curved, the area beyond it yellow-brown; cilia dark brown mixed with ochreous. Hind wing yellow-brown; the basal half suffused with black to the curved medial line; diffused blackish

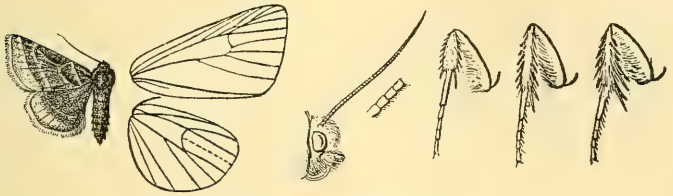


Fig. 9.—*Melaporphyria immortua*, ♂. ½.

postmedial and terminal bands. Underside yellow-brown; both wings with the basal area blackish, conjoined to the diffused discoidal spot and curved postmedial band.

Hab. U.S.A., Massachusetts, Newton, 1 ♂ Grote Coll., New York, Colorado, New Mexico, Gullinas Cañon (*Cockerell*), 1 ♂. *Exp.* 28 millim.

Genus **DYSOCNEMIS.**

Type.

Dysocnemis, Grote, Revised Check List, p. 34 (1890), non descr. *belladonna.*

Proboscis fully developed; palpi upturned, short, clothed with long hair; frons with rounded prominence; head and thorax clothed with rough hair; eyes small, reniform; antennæ of male minutely ciliated; fore tibiæ spined at sides; mid and hind tibiæ spined. Fore wing short and broad; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle or shortly stalked.

A. Fore wing with the medial area prominently whitish.
  a. Fore wing with the orbicular and reniform almost obsolete above..... *prorupta.*
  b. Fore wing with the orbicular and reniform prominent..... *belladonna.*
B. Fore wing with the medial area not prominently whitish.
  a. Hind wing with the whitish medial band not indented by the black discoidal spot ..... *borealis.*
  b. Hind wing with the whitish medial band indented by the black discoidal spot ..... *oregonica.*

23. Dysocnemis prorupta.

Heliothis proruptus, Grote, Trans. Am. Ent. Soc. iv. p. 294 (1873); Smith, Cat. Noct. N. Am. p. 287.
Melicleptria venusta, H. Edw. Proc. Cal. Ac. Sci. vi. p. 133 (1875).

Head and thorax black-brown tinged with crimson; pectus, legs, and abdomen clothed with long black hair, the anal tuft whitish at extremity. Fore wing black-brown suffused with crimson; the basal area bounded by the black antemedial line, which is excurved below costa and to inner margin; the medial area white, slightly irrorated with fuscous or sometimes suffused with red-brown; the

discoidal spot indistinct, blackish, with some red-brown above it on costa; the postmedial line black, oblique from costa to vein 4, where it is strongly angled, then strongly incurved. Hind wing

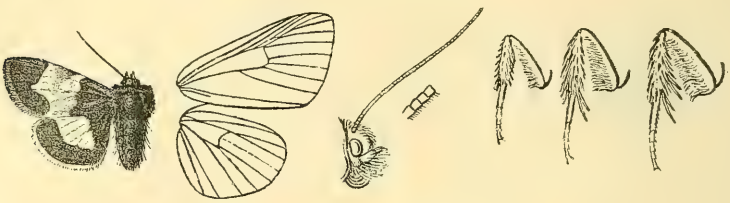


Fig. 10.—*Dysocnemis prorupta*, ♂. ½.

black, with large white medial patch not reaching inner margin and with its outer edge angled at vein 4; cilia white. Underside of fore wing with the discoidal spot black and conjoined to a black costal fascia.

Hab. U.S.A., Oregon, California, 1 ♀ Grote Coll., (*Walsingham*) 12 ♂, 2 ♀. *Exp.* 30 millim.

*24. Dysocnemis belladonna.

Melicleptria belladonna, H. Edw. Papilio, i. p. 20 (1881); Smith, Cat. Noct. N. Am. p. 287.

Head and thorax with long brown hair; tarsi whitish: abdomen black, with dorsal brown crest at base. Fore wing rich brown, deepest towards base and inner margin; medial area whitish irrorated with brown, somewhat triangular in shape and not reaching costa or inner margin, with the large black-brown orbicular and reniform stigmata on it; postmedial line narrow, blackish, strongly excurved at middle, where it almost touches the slightly sinuous whitish subterminal line; a terminal series of triangular brown spots in the interspaces; cilia brown. Hind wing black, with large discal subelliptical white patch; cilia brown, white at tips. Underside of fore wing black-brown, with large creamy-white discal patch, orbicular and reniform black.

Hab. U.S.A., Utah. *Exp.* 30 millim. This species is unknown to me.

25. Dysocnemis borealis, n. sp. (Plate LV. fig. 6.)

♀. Head, thorax, and abdomen black, the two former tinged with rufous. Fore wing with the basal area black and including the small round indistinct black orbicular stigma; no trace of the ante- or postmedial lines; the medial area pale, irrorated and suffused with brown; the reniform small, black, and rather diffused; terminal area black-brown. Hind wing black, the basal area including the discoidal spot and followed by a broad yellowish-white postmedial band, which does not reach inner margin and has its outer edge slightly angled at vein 4. Underside of fore wing

with large white discal patch enclosing the prominent black reniform stigma; hind wing with yellowish-white band as on upperside.

Hab. Canada, Hudson's Bay, St. Martin's Falls (*Barnston*), 1 ♀ type. *Exp.* 28 millim.

26. Dysocnemis oregonica. (Plate LV. fig. 7.)

Melicleptria oregonica, H. Edw. Proc. Cal. Ac. Sci. vi. p. 135 (1875); Smith, Cat. Noct. N. Am. p. 287.

♂. Head and thorax black mixed with pale olive hair; abdomen black mixed with grey hair. Fore wing black suffused with pale olive; the orbicular and reniform concolorous, the former round, the latter large, with whitish in the cell before and between them and with a diffused whitish band beyond them to just beyond the postmedial line, which is minutely waved and slightly angled inwards in discal fold, and is excurved from below costa to vein 3, then incurved, or may be almost obsolete; an indistinct pale subterminal line slightly waved towards costa. Hind wing black, with some white before the large oblique black discoidal lunule, which has a white band beyond it not reaching inner margin and with its outer edge slightly angled at vein 4; a pale subterminal mark between veins 2 and 4. Underside of both wings with more white; the black spots prominent and a black streak below cell of fore wing.

Hab. U.S.A., Oregon, Washington Terr., 1 ♂, Nevada, 1 ♂, Colorado, California, Sierra Nevada, 3 ♂, Grote Coll. *Exp.* 28–38 millim.

Genus **PYROCLEPTRIA**, nov.

Type, *P. cora*.

Proboscis fully developed; palpi oblique, fringed with long hair in front; frons with rounded prominence; eyes small, reniform; antennæ of male ciliated; head clothed with rough hair; thorax clothed with rough hair mixed with large scales; fore tibiæ spined at sides, short and broad, with long curved claw on inner side and short claw on outer; mid and hind tibiæ spined. Fore wing short and broad; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

A. Hind wing reddish orange ..... *californica*.
B. Hind wing orange-yellow ..... *cora*.

27. Pyrocleptria californica, n. sp. (Plate LV. fig. 8.)

♂. Head and thorax clothed with grey, pale brown, and black hair; pectus and legs with brownish-white hair; abdomen black, with some brownish-white hair and scales. Fore wing reddish brown, mixed with ochreous and a few black scales; a double waved subbasal line from costa to submedian fold; a pale antemedial line defined on each side by black and incurved in cell; claviform indicated by some black scales on its outer edge; orbicular and reniform black, overlaid by rufous scales and with ochreous spots

between and beyond them; the postmedial line pale defined by black, bent outwards below costa, incurved in discal fold, and bent inwards below vein 4 to below end of cell, a brownish band between it and the grey subterminal line, which is excurved below costa and at middle and bent outwards to tornus; a terminal series of black points; cilia chequered brown and black. Hind wing deep orange; some black suffusion at base and on inner margin; a large black discoidal lunule; a moderately broad terminal black band; cilia ochreous white, blackish at base. Underside of fore wing orange, with streak below the cell; orbicular, reniform, and terminal band black.

Hab. U.S.A., California (*Walsingham*), 1 ♂ type. *Exp.* 20 millim.

28. Pyrocleptria cora.

Heliothis cora, Ev. Bull. Mosc. 1837, p. 47; id. Faun. Volg. Ur. p. 324; Dup. Lép. Fr. Suppl. iv. p. 227, pl. 70. f. 1; Herr.-Schäff. Schmett. Eur. ii. pl. 49. ff. 246, 247; Staud. Cat. Lep. pal. p. 221.
Anthœcia coreta, Guen. Noct. iii. p. 399 (1852).

Head and thorax red-brown mixed with grey hair and the thorax with black scales; pectus and legs brownish ochreous; abdomen black with ochreous segmental lines, the anal tuft and ventral surface ochreous. Fore wing red-brown; a subbasal black striga from costa; the ante- and postmedial lines grey arising from black costal striæ, the former highly curved, the latter excurved to

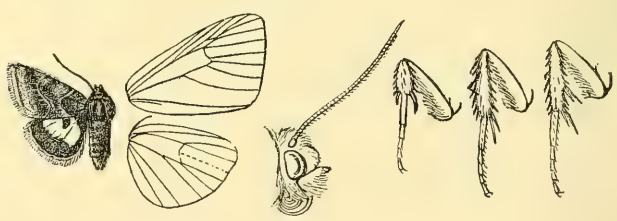


Fig. 11.—*Pyrocleptria cora*, ♂. ½.

vein 4, then strongly incurved; a dark medial shade obtusely angled at lower angle of cell; grey streaks on the veins of medial area except towards costa, and short streaks on the veins beyond the postmedial line, where there is some darker brown suffusion; an indistinct minutely waved subterminal line, with a black mark on its inner side at costa; fine brown lines on termen and through the cilia. Hind wing orange; the base and inner margin black; a large black discoidal lunule sometimes conjoined to the black basal area; a moderately broad terminal black band with slightly sinuous inner edge. Underside orange; fore wing with point in cell, spot below it, the reniform, and a curved postmedial band forking towards costa black; hind wing with black discoidal lunule; traces of a terminal band suffused with red towards apex.

Hab. Hungary; S. Russia, Sarepta, 3 ♂, 2 ♀; Urals, 1 ♂; W. Siberia, Altai; Mongolia; E. Siberia; Amur. *Exp.* 24 millim.

Genus **PSEUDOTAMILA.**

Type.
Pseudotamila, Smith, Trans. Am. Ent. Soc. x. p. 238 (1883)..... *vanella.*

Proboscis fully developed; palpi oblique, extending to well beyond the frons, the 2nd joint fringed with hair in front; frons with large rounded prominence; eyes small, reniform; antennæ of male ciliated; head and thorax clothed with large scales and hair, the metathorax with crest; fore tibiæ rather short and broad, spined at sides, and with long curved claw on inner side at extremity, and short claw on outer; mid and hind tibiæ spined. Fore wing short and broad; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

A. Hind wing orange..... *copiosa.*
B. Hind wing black.
a. Hind wing with antemedial whitish band and discal spot. *vanella.*
b. Hind wing with white discal spot with another spot below it. *perminuta.*

29. **Pseudotamila copiosa.** (Plate LV. fig. 9.)

Heliothis copiosa, Leech, Trans. Ent. Soc. 1900, p. 23.

♂. Head and thorax clothed with rufous, black, and a few grey scales; abdomen black, with grey segmental lines, the ventral surface yellowish. Fore wing red-brown; a yellowish spot at base of costa; a highly excurved and slightly waved antemedial grey line; the postmedial line oblique towards costa, excurved to vein 4, then strongly incurved, the area between the lines pale suffused with black; the reniform blackish with some rufous before it, placed on the medial shade which is oblique from costa to lower angle of cell, then incurved; the subterminal line with some black before it at costa and the area beyond it tinged with grey, angled outwards at vein 7, then excurved and dentate, incurved below vein 2. Hind wing deep orange; the base black, extending on inner margin almost to join the terminal black band which has a sinuous inner edge; a large oblong black discoidal spot. Underside orange; fore wing with spots in and below middle of cell, the reniform stigma and postmedial band black; hind wing with short subbasal streak below the cell, discoidal spot, and subterminal band obsolescent towards costa, black.

Hab. W. China, Hou-Kow, 10,000 ft., 1 ♂ type. *Exp.* 28 millim.

30. **Pseudotamila vanella.**

Tamila vanella, Grote, Can. Ent. xi. p. 197 (1879); Smith, Cat. Noct. N. Am. p. 287.

Head and thorax clothed with black-brown, rufous, and white scales; palpi below, pectus, and legs clothed with greyish-white hair; abdomen black, with whitish segmental lines, the ventral surface whitish, the anal tuft tinged with rufous. Fore wing black, overlaid by rufous or vinous-red and white scales; a curved white

subbasal line from costa to submedian fold; the antemedial line black, slightly excurved between middle of cell and vein 1; the medial area white, tinged with rufous towards postmedial line and with grey towards inner margin; the reniform represented by a whitish discoidal line on a dark patch and with dark suffusion above it; the postmedial line white defined by brown, minutely waved, excurved from costa to vein 4, then incurved; the subterminal line formed by a series of dentate black and white marks, angled inwards to the postmedial line at discal fold, then excurved and again angled inwards in submedian fold; a terminal series of black

Fig. 12.—*Pseudotamila vanella*, ♂. ½.

points; cilia chequered black-brown and whitish. Hind wing black, with white medial band narrowing to above inner margin, which it does not reach, and with a large oblique discoidal spot connected with the terminal black area; a more or less developed whitish subterminal line between veins 5 and 2; underside of fore wing white, the costal area rufous, the basal area in and below cell, a large discoidal spot, and postmedial band black; hind wing with the costal area rufous.

Hab. U.S.A., Nevada, 1 ♂ type, California (*Walsingham*), 3 ♂, 1 ♀. *Exp.* 22 millim.

*31. Pseudotamila perminuta. (Plate LIX. fig. 2.)

Melicleptria perminuta, H. Edw. Papilio, i. p. 21 (1881); Smith, Cat. Noct. N. Am. p. 287.

Fore wing dark brown, irrorated with white scales; a curved whitish antemedial line; reniform blackish, defined by the Y-shaped medial whitish band, which does not reach costa or inner margin; postmedial line oblique from costa to vein 4, where it is strongly angled outwards, then greatly incurved. Hind wing black, with pure white discal spot and another below it towards inner margin. Underside of fore wing black, with broad medial white band and discal spot.

Hab. U.S.A., California, Sierra Nevada. *Exp.* 13 millim. This species is unknown to me; figured from a drawing from specimen in Am. Mus. Nat. Hist.

Genus RAGHUVA.

Type.

Raghuva, Moore, P. Z. S. 1881, p. 362 ..... *confertissima.*

Proboscis fully developed; palpi porrect to just beyond frons and fringed with hair below; frons with rounded prominence, with corneous plate below it; eyes large, rounded; antennæ of male somewhat laminate and ciliated; head and thorax clothed with hair and scales; fore tibiæ short and broad, with long curved claw on inner side and short claw on outer; mid and hind tibiæ spined. Fore wing rather short and broad; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

Sect. I. Fore wing of male with rather large glandular swelling on middle of costa and prominent semihyaline elongate brands below costa and in cell, the neuration much distorted.

32. Raghuva stigmatia, n. sp.

♂. Head and thorax ochreous brown mixed with greyish; abdomen brownish ochreous. Fore wing greyish ochreous; claviform a narrow elongate streak defined by some blackish scales and arising from near base; median nervure obscurely streaked with brown; reniform with brownish outline and centre, distorted by

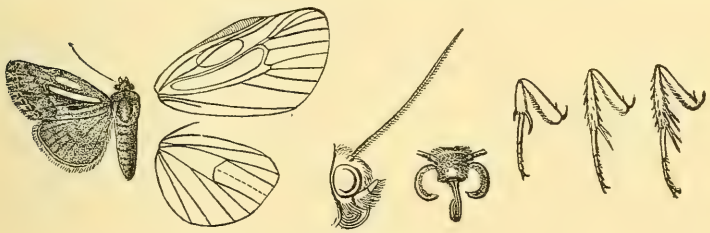


Fig. 13.—*Raghuva stigmatia*, ♂. ½.

the brand in cell; postmedial line ill-defined, brownish, dentate with some whitish on its outer edge; a series of brownish somewhat dentate marks on termen and a terminal series of black points. Hind wing greyish ochreous tinged with brown; the cilia whitish with a dark line near base; the underside with indistinct discoidal spot, postmedial line, and terminal series of points.

Hab. Basutoland, Maseru (*Crawshay*), 1 ♂; C. Colony, Transkei (*Miss F. Barrett*), 1 ♂ type. *Exp.* 30 millim.

Sect. II. Fore wing of male with small glandular swelling on middle of costa and elongate depressions below middle of costa and in cell.

A Fore wing with dentate postmedial line.

a. Fore wing with radiating streaks on the veins of terminal area ..... *multiradiata.*

b. Fore wing without radiating streaks on the veins of terminal area ..... *perdentata.*

B. Fore wing with non-dentate postmedial line.
  a. Hind wing white, with large black discoidal spot and broad terminal fuscous band ..... *discalis*.
  b. Hind wing uniform fuscous ..... *cana*.
C. Fore wing with postmedial series of black points.
  a. Fore wing with discoidal spot, no fuscous fascia on median nervure ..... *confertissima*.
  b. Fore wing without discoidal spot, a fuscous fascia on median nervure and vein 4 ..... *perstriata*.

33. Raghuva multiradiata. (Plate LV. fig. 10.)

Raghuva multiradiata, Hmpsn. Ann. S. Afr. Mus. ii. p. 257 (1902).

Head, thorax, and abdomen olive-brown mixed with black; antennæ blackish; tarsi black, with pale rings. Fore wing pale olive-brown; the costa black; a subbasal dentate black line from costa to vein 1, with some rufous and white between it and the waved black antemedial line, which is acutely angled outwards above inner margin; claviform very large and elongate, with brown outline and pale streak defined by brown streaks at middle; orbicular and reniform with blackish outline and centre, the former elliptical, the latter large; the postmedial line strongly bent outwards below costa, then strongly dentate and excurved to vein 4, then incurved, and defined by white on outer side; the terminal area dark olive-brown, with pale hastate marks with short black streaks on the veins extending from the postmedial line to termen; a terminal series of black spots; cilia pale and black. Hind wing fuscous brown, with obscure rufous subterminal patch between veins 2 and 4. Underside of fore wing suffused with fuscous except terminal area; reniform black; hind wing with black discoidal lunule and curved postmedial line.

Hab. Br. E. Africa, Eb Urru (*Betton*), 1 ♂, Athi R. (*Betton*), 1 ♀; Mashonaland, Salisbury (*Marshall*), 2 ♂ type. *Exp.* 30 millim.

34. Raghuva perdentata, n. sp. (Plate LV. fig. 11.)

♂. Head and thorax ochreous mixed with black; abdomen ochreous. Fore wing ochreous, suffused with rufous along median nervure, between veins 2 and 5 and beyond the postmedial line; a highly dentate fuscous antemedial line; orbicular small, round, whitish with fuscous outline and centre; reniform fuscous, with irregular outline; the postmedial line strongly bent outwards below costa, then highly dentate, excurved to vein 4, then oblique and defined by white on outer side; some pale and black marks on apical part of costa and a terminal series of small black lunules; cilia fuscous, with pale line through them. Hind wing ochreous white, with ill-defined fuscous postmedial line between veins 4 and 2, and slight dentate brown terminal marks on the veins towards apex. Underside of fore wing with the reniform black, a curved fuscous postmedial band.

♀. Hind wing with the terminal area suffused with fuscous.

Hab. Br. E. Africa, Kikuyu (*Crawshay*), 1 ♂ type; Burma, Myingyan (*Watson*), 1 ♀. *Exp.* 22–24 millim.

35. Raghuva discalis, n. sp. (Plate LV. fig. 12.)

♀. Head and thorax pale olive-brown; abdomen pale irrorated with black, and with diffused dorsal black bands. Fore wing pale olive-brown, the costal area, the median nervure, and veins 3, 4, and 6 to the postmedial line suffused with white; a diffused blackish fascia below base of cell, some brown above median nervure and some black scales on a discoidal brown patch; the postmedial dark line strongly bent outwards below costa, then oblique and somewhat sinuous, defined by whitish on outer side, beyond which is a diffused brown band; a terminal series of black points on a brown line. Hind wing whitish; the basal, costal, and inner area suffused with brown; a large black discoidal lunule; a broad blackish postmedial band diffused to termen in places; cilia white, with a dark line at base. Underside of fore wing whitish, the costal area brown, blackish streaks above and below base of median nervure, the reniform and curved postmedial band black. Hind wing white, the costal area irrorated with brown, a short black streak in base of cell, a large discoidal lunule and postmedial streaks on veins 2, 3, 4, and 6.

Hab. Br. E. Africa, Athi R. (*Betton*), 1 ♀ type. *Exp.* 26 millim.

36. Raghuva cana, n. sp. (Plate LV. fig. 13.)

♀. Head and thorax grey-white; abdomen ochreous tinged with fuscous, the ventral surface white irrorated with black. Fore wing with the basal half and costal area white irrorated with black; two black points in cell before upper angle and one beyond the angle; a postmedial fuscous line with slight black striæ on the veins strongly excurved from below costa to vein 4, then very oblique, the area beyond it except towards costa ochreous suffused with rufous and irrorated with black; an oblique fuscous line from termen just below apex to inner margin before tornus; a fine white terminal line; cilia grey, with two fine white lines through them. Hind wing fuscous, the cilia white with brown line at base. Underside of fore wing fuscous, with the termen whitish.

Hab. Br. E. Africa, Kikuyu (*Crawshay*), 1 ♀ type, Athi-ya-Mawe (*Betton*), 1 ♀. *Exp.* 26 millim.

37. Raghuva confertissima.

Leucania confertissima, Wlk. xxxii. 625 (1865); Hmpsn. Moths Ind. ii. p. 180.

Head and thorax ochreous tinged with rufous brown; abdomen pale, dorsally tinged with ochreous. Fore wing ochreous suffused with rufous, and with rufous streaks on the veins; traces of a waved antemedial line, with the diffused fuscous claviform on its outer edge; the orbicular represented by a fuscous point; the reniform obscure fuscous; a postmedial series of black points on the veins, excurved from costa to vein 4, then incurved; some obscure dentate fuscous marks sometimes present on termen; a

black point on costa before apex and a terminal series. Hind wing ochreous white, with traces of a subterminal dark band.

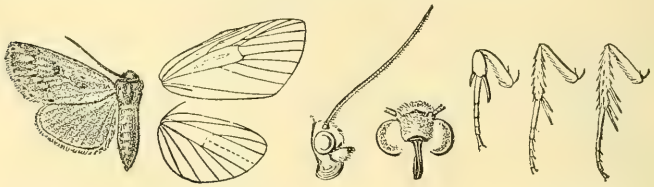


Fig. 14.—*Raghuva confertissima*, ♂. ½. (From Moths Ind. vol. ii.)

Hab. S. India, Gooty (*Campbell*), 1 ♀, Coimbatore (*Walhouse*), 3 ♂ type. *Exp.* 26–28 millim.

38. **Raghuva perstriata**, n. sp. (Plate LV. fig. 14.)

♂. Head and thorax ochreous tinged with brown; abdomen ochreous. Fore wing ochreous; an obscure diffused fuscous fascia along median nervure and above vein 4 to termen; antemedial black points on median nervure and vein 1; a curved postmedial series of black points on the veins; a minute black streak on costa before apex and a terminal series of points. Hind wing ochreous.

Hab. N.W. Himalayas, Kangra, 1 ♂ type. *Exp.* 30 millim.

Genus **NEOCLEPTRIA**, nov.

Type, *N. punctifera*.

Proboscis fully developed; palpi obliquely porrect to just beyond frons and fringed with hair below; frons with rounded prominence with corneous ridge across it; eyes large, naked; antennæ of male ciliated; head and thorax clothed with scales and hair, without crests; fore tibiæ with slender curved claw on inner side and shorter claw on outer; mid and hind tibiæ spined; abdomen without crests. Fore wing with veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

39. **Neocleptria punctifera.**

Heliothis spinosæ, Wlk. xi. 686 (1857), nec Guen.
Heliothis punctifera, Wlk. xi. 691 (1857).
Heliothis leucatma, Meyr. Trans. Ent. Soc. 1897, p. 368.

Head and thorax grey mixed with black and often tinged with rufous; abdomen whitish dorsally, strongly irrorated with black especially in female. Fore wing grey, strongly irrorated with black and more or less strongly suffused with rufous; a waved subbasal line from costa to submedian fold; the antemedial line angled outwards below costa and cell and bent outwards above inner margin, with a less distinct line on its inner edge; claviform often represented by a diffused blackish patch; orbicular and reniform brown-edged and with fuscous centres, the former round, the latter with two black points above it on costa; an indistinct waved medial line from cell

to inner margin; the postmedial line dentate and produced to white points on the veins, bent outwards below costa, excurved to vein 3, then incurved and with indistinct line beyond it; the subterminal line pale, angled outwards below costa, inwards at discal fold, then excurved and with dark mark on its inner side at costa; a terminal series of black points and often some black marks at middle; cilia chequered fuscous and rufous. Hind wing white, the basal and inner areas sometimes tinged with fuscous; a more

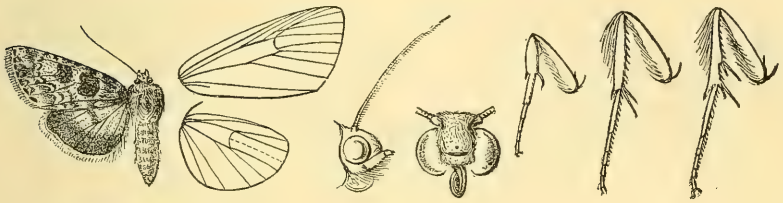


Fig. 15.—*Neocleptria punctifera*, ♂. ½.

or less prominent dark discoidal lunule; the terminal area black, with diffused inner edge and often with pale subterminal spot at middle; cilia white, with dark line at base. Underside white; fore wing with the orbicular and reniform stigmata black; both wings with fuscous postmedial band.

Hab. N. Australia, Roebuck B. (*J. J. Walker*), 3 ♀; W. Australia, Sherlock R. (*Clements*), 3 ♂, 5 ♀, Geraldton (*Saunders*), 2 ♀; N. S. Wales, Broken Hill (*Lower*), 3 ♂, 6 ♀; Victoria, Melbourne; hab.? 1 ♂, 5 ♀ type. *Exp.* 32–38 millim.

Genus **RHODOCLEPTRIA**, nov.

Type, *R. incarnata*.

Proboscis fully developed; palpi oblique, fringed with long hair in front, the 3rd joint short; frons with rounded prominence, with corneous plate below it; eyes large, rounded; antennæ of male almost simple; head and thorax clothed with hair, without crests; fore tibiæ short and broad, with long curved claw on inner side and short claw on outer; mid and hind tibiæ spined. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

40. Rhodocleptria incarnata.

Noctua incarnata, Freyer, Beitr. iii. pl. 256, f. 4 (1839), & iv. pl. 383; Staud. Cat. Lep. pal. p. 222.

Heliothis boisduvalii, Boisd. Gen. et Ind. Meth. p. 163 (1840); Dup. Lép. Fr. Suppl. iii. pl. 38. f. 5; Herr.-Schäff. Schmett. Eur. ii. pl. 52. f. 262.

Head and thorax pale olive-green, more or less strongly tinged with pink; hair on pectus white, on legs pink; abdomen brownish white, with the dorsal crest at base and ventral surface pink. Fore wing olive-yellow; the costa tinged with pink with dark points on it; the orbicular represented by a dark point; the reniform a small

dark lunule on the medial shade, which is angled at lower angle of cell, then oblique; the postmedial line represented by a curved series of dark points or obsolete; the subterminal line very indistinct, angled outwards at vein 7 and excurved at middle; cilia pink. Hind wing white; the basal area suffused with dark brown; the discoidal spot diffused; the terminal area broadly blackish,

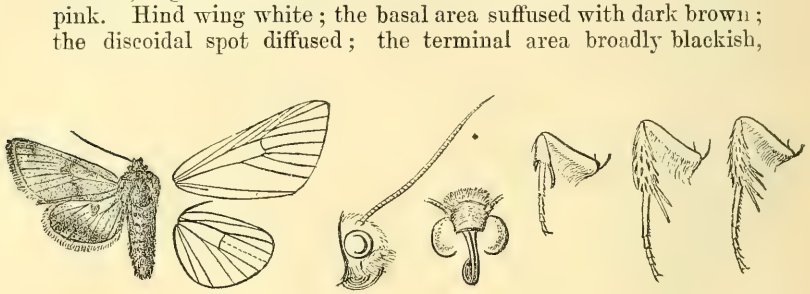


Fig. 16.—*Rhodocleptria incarnata*, ♂. ½.

with pale patch on middle of termen; cilia pink. Underside of both wings with the marginal areas broadly pink; fore wing with the reniform and a broad fascia below the cell confluent with the postmedial band blackish.

Hab. Spain; Algiers; Hungary; Balkans; S. Russia, Sarepta, 7 ♂, 2 ♀, Zeller & Frey Colls.; Armenia; Asia Minor, Taurus, 1 ♂, Zeller Coll., Pontus, Lydia; Syria; C. Asia. *Exp.* 34–36 millim.

Larva. Pale yellow; head spotted with black; a dark dorsal line; warts black; 1st somite with two subdorsal warts in front, the lower confluent with a large one behind, three lateral and one sublateral; 2nd and 3rd somites with two transverse subdorsal warts, three lateral behind and two lower down in front, and one sublateral; the abdominal somites with the two subdorsal warts placed longitudinally, three lateral and one sublateral; 2nd to anal somites with subdorsal orange patches and slight subdorsal and lateral lines.

Genus **CHLORIDEA.**

	Type.
Chloridea, Westw. Jardine's Nat. Libr. xxxii. p. 198 (1841)	*virescens.*
Aspila, Guen. Noct. ii. p. 174 (1852)	*virescens.*
Heliocheilus, Grote, Proc. Ent. Soc. Phil. iv. p. 328 (1865)	*paradoxus.*
Heliothis, Hübn. Tent. ined.	*dipsacea.*

Proboscis fully developed; palpi oblique, fringed with rough hair in front and projecting to just beyond frons, which has a rounded prominence; eyes large, rounded; antennæ ciliated; head and thorax smoothly clothed with hair and scales; fore tibiæ spined at sides and with a slender apical pair of claws; mid and hind tibiæ spined; abdomen smoothly scaled. Fore wing with vein 3 from near angle of cell; 5 from above angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellular; 6, 7 from upper angle.

Sect. I. (*Heliocheilus*). Fore wing of male with the costa dilated and thickened at middle, with an elliptical patch of ribbed hyaline membrane below it and a more elongate patch in the cell; the subcostal nervure bent downwards and the veins from its extremity distorted.

A. Hind wing fulvous yellow ..... *lupata.*
B. Hind wing brown, with fulvous-yellow subterminal patch... *albidentina.*
C. Hind wing black, with ochreous postmedial band ..... *fervens.*
D. Hind wing ochreous white, the terminal area blackish.
a. Hind wing with black fasciæ in submedian fold and on inner margin ..... *translucens.*
b. Hind wing without black fasciæ in submedian fold and on inner margin.
a^1. Fore wing with the postmedial line moderately dentate and produced to white points ..... *paradoxa.*
b^1. Fore wing with the postmedial line strongly dentate and defined by white throughout.
a^2. Hind wing with the postmedial line incurved at vein 4 ..... *cystiphora.*
b^2. Hind wing with the postmedial line not incurved at vein 4 ..... *hyalosticta.*

41. Chloridea lupata. (Plate LV. fig. 16.)

Heliothis lupatus, Grote, Can. Ent. vii. p. 224 (1875); Smith, Cat. Noct. N. Am. p. 281.

♀. Head, thorax, and abdomen ochreous-fulvous. Fore wing ochreous, suffused with fulvous on terminal half; an indistinct waved subbasal line from costa to submedian fold; traces of a waved antemedial line; orbicular represented by a blackish point in cell; reniform blackish, with white discoidal line on it; a medial shade from lower angle of cell to inner margin; the postmedial line formed by a series of black points with white points on their outer edge, bent outwards below costa, excurved to vein 4, then incurved and with a rufous band on its outer edge; a terminal series of black points; cilia fuscous. Hind wing yellow tinged with rufous, especially towards termen; an indistinct discoidal spot and curved postmedial line; a slight brown terminal line and line at base of cilia except towards tornus. Underside of fore wing with the orbicular and reniform prominent.

Hab. U.S.A., Texas, 1 ♀ type. *Exp.* 34 millim.

42. Chloridea albidentina. (Plate LV. fig. 15.)

Perigea albidentina, Wlk. xxxii. 680 (1865); Smith, Cat. Noct. N. Am. p. 269.

♀. Head and thorax dull brown; abdomen brownish ochreous irrorated with dark scales. Fore wing ochreous brown suffused with rufous; the antemedial line represented by some white points; the orbicular a small dark spot with white centre; reniform diffused, dark with white centre; the postmedial line dentate, white with black points on its inner side, curved from costa to vein 2 where it is angled inwards, and with a diffused rufous band on its inner edge; some black points on termen; cilia fuscous. Hind wing ochreous, suffused with dark brown and paler towards base; an oblique dis-

coidal bar; an ochreous-red patch on termen between veins 4 and 1. Underside reddish ochreous; fore wing with the orbicular and reniform black; both wings with obscure postmedial band.

Hab. U.S.A., Florida (*Doubleday*), 1 ♀ type. *Exp.* 30 millim.

43. Chloridea fervens. (Plate LV. fig. 19.)

Heliothis fervens, Butl. Trans. Ent. Soc. 1881, p. 186.
Heliothis foveolatus, Staud. Stett. ent. Zeit. 1888, p. 263; id. Rom. Mém. vi. p. 552, pl. 10. f. 9; id. Cat. Lep. pal. p. 222.

♂. Head and thorax red-brown; abdomen ochreous tinged with fuscous and with paler segmental lines and anal tuft. Fore wing red-brown, rather redder towards inner margin; the markings obsolete except a somewhat curved postmedial dark shade. Hind wing black, with ochreous postmedial band from costa to vein 1, towards which it is reduced to two small spots; cilia pale.

♀. Head and thorax dark chestnut; pectus and legs ochreous, the tibiæ and tarsi tinged with brown; abdomen black, with rufous segmental bands, the anal tuft rufous, the ventral surface pale rufous irrorated with black. Fore wing chestnut, darkest on inner and terminal areas; the subbasal and antemedial lines almost obsolete; the orbicular and reniform represented by indistinct blackish patches; the postmedial line very indistinct, minutely waved, incurved below vein 3; an indistinct sinuous subterminal line. Hind wing black, with pale ochreous spot beyond the cell; the termen irrorated with grey; cilia tipped with white. Underside of fore wing with the disk black; the orbicular and reniform black, with ochreous-white patches before and beyond them; hind wing with the costal area rufous, the rest of medial area whitish with large black discoidal lunule.

Ab. 1. Hind wing with pale patches in and below cell, a pale dentate mark on middle of termen.—W. China.

Hab. Amurland, Ussuri; Japan, Tokio (*Maries*), 1 ♀ type; W. China, Chang-yang (*Pratt*), 1 ♀. *Exp.* 32 millim.

*44. Chloridea translucens.

Heliocheilus translucens, Feld. Reis. Nov. pl. 108. f. 49 (1874); Hmpsn. Moths Ind. ii. p. 176.

♂. Head and thorax pale olive-brown; abdomen ochreous, dorsally tinged with fuscous. Fore wing pale olive-brown; traces of a subbasal line; a sinuous antemedial line angled outwards on median nervure; an oblique shade from lower angle of cell to inner margin; some whitish before the indistinct dentate postmedial line, which is excurved from costa to vein 4, then incurved, the area between it and the indistinct pale sinuous subterminal line tinged with fuscous. Hind wing ochreous whitish; a large black discoidal lunule; a broad terminal black band emitting fasciæ to base in submedian fold and on inner margin; cilia pale.

Hab. N.W. Himalayas, Urni (*Stoliczka*), type † ♂ in Coll. Rothschild. *Exp.* 28 millim.

45. Chloridea paradoxa.

Heliocheilus paradoxus, Grote, Proc. Ent. Soc. Phil. iv. p. 329, pl. ii. ff. 3–5 (1865); Smith, Cat. Noct. N. Am. p. 269.

♂. Pale brownish ochreous. Fore wing with the orbicular usually present as a dark point above median nervure; reniform represented by an obscure spot; the postmedial line represented by a curved series of dark points with white points on their outer edge; some dark points on termen usually present; cilia brownish. Hind wing ochreous white, with diffused dark discoidal spot; traces of a curved postmedial line, the area beyond it suffused with fuscous with a pale patch at middle. Underside of fore wing with the reniform large and black and with a curved dark band beyond it; hind wing with terminal black spot below vein 2.

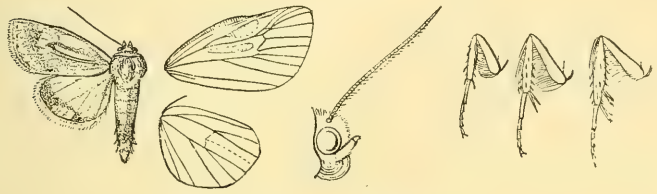


Fig. 17.—*Chloridea paradoxa*, ♂. ½.

♀. Fore wing with the markings more developed, the orbicular and reniform spots distinct; a dentate black postmedial line.

Ab. 1. ♂ ♀ much browner; fore wing irrorated with black; the claviform, orbicular, and reniform stigmata of female prominent and with white centres; the postmedial line with fuscous band on its outer edge; hind wing with the basal area suffused with fuscous.

Hab. U.S.A., 1 ♂, 1 ♀; Texas, Alabama, 1 ♂, Colorado, 2 ♂.
Exp. 26–32 millim.

*46. Chloridea cystiphora. (Plate LXI. fig. 1.)

Anthœcia cystiphora, Wllgrn. Wien. ent. Mon. iv. p. 172 (1860) ♂.
Anthœcia inflata, Wllgrn. Wien. ent. Mon. iv. p. 172 (1860) ♂.
Anthœcia onca, Wllgrn. Wien. ent. Mon. iv. p. 172 (1860) ♀.

♂. Head and thorax grey mixed with brown; abdomen ochreous mixed with brown, grey below. Fore wing grey mixed with brown; the antemedial line waved, interrupted by the hyaline streaks except at costa and from cell to inner margin; claviform well developed, blackish; orbicular obliterated by the hyaline streaks; reniform large, with blackish centre and ochreous annulus defined by black; postmedial line strongly dentate, black defined by white on outer side, bent outwards below costa, excurved to vein 4, then incurved; subterminal line whitish, defined by brown suffusion before and beyond it, dentate and angled inwards in discal fold; a terminal series of black points. Hind wing pale ochreous; the basal area suffused with brown; a brown discoidal bar; a strong

brown postmedial line incurved below vein 4; terminal area brown, with ochreous spots in discal fold and on each side of vein 3. Underside whitish; fore wing with black discoidal patch and curved postmedial band; hind wing with fuscous discoidal bar, sinuous postmedial line incurved below vein 4, and indistinct subterminal line with black spots at discal and submedian folds.

♀. Fore wing, orbicular with blackish centre and ochreous annulus defined by black.

Hab. Panama, type † ♂ in Mus. Stockholm; Galapagos Is., type † ♀ *onca* in Mus. Stockholm; St. Joseph Is.; ? Hawaii, Honolulu, type † ♂ *inflata* in Mus. Stockholm. *Exp.* 30 millim.

47. Chloridea hyalosticta. (Plate LV. fig. 17.)

Heliothis hyalosticta, Hmpsn. Moths Ind. iv. p. 507 (1896).

♂. Head, thorax, and abdomen brownish grey irrorated with dark scales. Fore wing brownish grey irrorated with dark scales; antemedial and medial dark points on costa; reniform represented by a fuscous discoidal bar; the postmedial line curved, highly dentate, whitish with dark streaks on the veins on its inner side and a brownish spot beyond it on costa; a terminal series of black points. Hind wing ochreous white tinged with brown; a discoidal bar, curved postmedial line, traces of a brown subterminal band, and some black points on termen. Underside of fore wing with the reniform prominent, black.

♀. Fore wing with the orbicular and reniform blackish with pale annuli defined by a dark line, the former elongate; an obscure brown band beyond the postmedial line; the underside with the orbicular linear, black.

Hab. Sind, Karáchi (*Swinhoe*), 1 ♂ type, Bhuj (*Nurse*), 1 ♀; Burma, Thyetmyo (*Watson*), 1 ♀. *Exp.*, ♂ 24, ♀ 28 millim.

Sect. II. (*Chloridea*). Fore wing of male normal.

A. Hind wing with large black discoidal spot.
  a. Fore wing with distinct whitish subterminal line not incurved at discal fold ..... *ononis*.
  b. Fore wing with the subterminal line indistinct and slightly incurved at discal fold.
    a^1. Fore wing with the terminal area as dark as postmedial area ..... *dejeani*.
    b^1. Fore wing with the terminal area paler than the postmedial area.
      a^2. Hind wing with the inner edge of terminal dark area angled outwards at vein 4 ..... *dipsacea*.
      b^2. Hind wing with the inner edge of terminal dark area not angled outwards at vein 4..... *phloxiphaga*.
B. Hind wing without large black discoidal spot.
  a. Fore wing without oblique antemedial, medial, and postmedial lines.
    a^1. Hind wing with the basal area blackish ..... *metachrisea*.
    b^1. Hind wing with the basal area pale.
      a^2. Fore wing with subterminal black point above tornus.
        a^3. Fore wing with prominent dark marks on costa above reniform stigma and at postmedial band. *peltigera*.

b^3. Fore wing without prominent dark marks on costa ..... *nubigera.*
b^2. Fore wing without subterminal black point above tornus.
a^3. Fore wing without pink costal fascia.
a^4. Fore wing with the inner area not suffused with rufous and fuscous.
a^5. Fore wing with the reniform stigma large and dark..... *scutuligera.*
b^5. Fore wing with the reniform stigma obsolescent.
a^6. Fore wing with the postmedial line indistinct and strongly dentate ..... *armigera.*
b^6. Fore wing with the postmedial line distinct, double, and hardly dentate ... *assulta.*
b^4. Fore wing with the inner area suffused with rufous and fuscous ..... *xanthiata.*
b^3. Fore wing with pink costal fascia..... *chilensis.*
b. Fore wing with oblique antemedial, medial, and postmedial lines ..... *virescens.*

48. Chloridea ononis.

Noctua ononis, Schiff. Wien. Verz. p. 89 (1776); Fabr. Mant. Ins. ii. p. 143; Esp. Schmett. Eur. iv. pl. 172. ff. 4–6; Hübn. Eur. Schmett., Noct. pl. 63. f. 312; Dup. Lép. Fr. vii. pl. 119. f. 3; Oberth. Ét. Ent. xviii. p. 44, pl. iii. f. 41; Staud. Cat. Lep. pal. p. 221.
Melicleptria septentrionalis, H. Edw. Papilio, iv. p. 45 (1884); Smith, Cat. Noct. N. Am. p. 289.

Head, thorax, and abdomen black, clothed with olive-grey hairs, the ventral surface with white hair. Fore wing whitish suffused with pale olive-brown; the basal area usually reddish brown to near the antemedial line which is indistinct and waved; the orbicular a very indistinct dark ring-mark; the reniform olive-brown with blackish outline and placed on a medial brown band which is oblique from it to inner margin; the postmedial line indistinct, minutely waved, excurved from below costa to vein 3, then incurved to the outer edge of medial band, and with a dark band from just beyond it to the pale diffused subterminal line which is slightly angled inwards at vein 6; an obscure terminal series of dark points sometimes present. Hind wing black, with short whitish streak usually present in cell before the large oblique black discoidal lunule, which has a whitish band beyond it not reaching inner margin and sometimes interrupted at the lower extremity of discoidal lunule; more or less prominent subterminal white spots above veins 2 and 3; cilia white, with their bases dark on apical half. Underside whitish, with the discoidal spots and postmedial band black; fore wing with black orbicular and streak below base of cell.

Hab. Hudson's Bay Terr.; Br. Columbia, Calgary; U.S.A., Colorado (*Cockerell*), 1 ♂; France; Germany, Zeller Coll., 3 ♂, 2 ♀; Switzerland, Frey Coll., 1 ♂, 1 ♀; Italy; Austria; Hungary; S.E. Russia; Armenia; Centr. Asia; Siberia; Amur; Centr. & W. China. *Exp.* 28–32 millim.

49. Chloridea dejeani.

Heliothis dejeani, Oberth. Ét. Ent. xviii. p. 44, pl. iii. f. 40 (1893).

♀. Head and thorax pale olive-brown mixed with grey; pectus clothed with grey hair; legs mostly black; abdomen black with pale segmental lines, the ventral surface whitish, the anal tuft fulvous. Fore wing pale olive-brown, the inner and terminal areas dark; traces of a waved antemedial line; the orbicular and reniform represented by obscure black patches, the latter with black point above it on costa; the postmedial line minutely waved, excurved to vein 3, then incurved, the area beyond it dark, especially before the indistinct waved subterminal line. Hind wing ochreous white, the basal area suffused with black to the large black discoidal lunule, the inner margin black; a broad black terminal band, its inner edge slightly angled outwards above vein 4, then incurved; traces of a pale patch at middle of termen; cilia white at tips. Underside of fore wing with the disk white, the orbicular and reniform prominent, black; hind wing with basal black streaks below the cell.

♂. Fore wing with the orbicular absent on upper and under sides; a medial shade from lower angle of cell to inner margin; hind wing without trace of pale patch on termen.

Hab. W. China, Ni-tou, 1 ♀, Ta-Tsien-lu. *Exp.* 32 millim.

50. Chloridea dipsacea.

Noctua dipsacea, Linn. Syst. Nat. xii. p. 856 (1766); Esp. Schmett. iv. pl. 172. ff. 1–3; Hübn. Samml. Eur. Schmett., Noct. f. 311; Dup. Lép. Fr. vii. pl. 119. f. 2; Staud. Cat. Lep. pal. p. 221.
Heliothis maritima, Grasl. Ann. Soc. Ent. Fr. (3) iii. p. 68, pl. 7 (1855).
Heliothis spergulariæ, Led. Noct. Eur. p. 230 (1857).
Heliothis adaucta, Butl. Ill. Het. B. M. iii. p. 19, pl. 45. f. 4 (1878).

Head and thorax pale brownish tinged with olive; abdomen olive-grey irrorated with black, thickly on dorsal surface, the anal tuft tinged with rufous. Fore wing pale olive-grey; the subbasal line represented by black points below costa and cell; an indistinct, irregularly-dentate antemedial line; the orbicular usually represented by three black points in the form of a triangle; reniform indistinct dusky or prominently black, with black points round its edge; an indistinct dentate medial line from cell to inner margin, often with an oblique shade on its inner edge to the antemedial line at inner margin; the postmedial line indistinct, dentate, with black points on the veins at extremity of teeth, bent outwards below costa, angled inwards above vein 5 and incurved below vein 3; a brown band between the postmedial and subterminal lines, below vein 3 extending to the medial line; the subterminal line pale, with dark mark on its inner side at costa and points on the veins, slightly angled outwards at vein 7 and incurved below vein 3; a terminal series of black points or spots. Hind wing ochreous white; the inner and costal areas suffused with black; a large black discoidal spot; the terminal area black, its inner edge angled outwards at veins 4 and 1 and incurved between those points; a bidentate pale

subterminal patch between veins 2 and 4; cilia white, with fuscous line at base towards apex. Underside whitish; fore wing with the basal half of inner area, the orbicular, reniform, and postmedial band black; hind wing with the markings of upperside showing indistinctly through.

Ab. 1. *maritima*. Head, thorax, and fore wing much more rufous; hind wing more fulvous yellow.—France, Canaries, Japan, Corea.

Hab. Europe except polar region, Britain, France, 2 ♂, Germany, Zeller & Frey Colls.; Canaries (*Leech*), 1 ♂; Syria, Lebanon, 1 ♀, Burma, 1 ♂, 1 ♀; E. Turkestan, Yarkand, 1 ♂; Amur, 1 ♀; Japan, Yezo (*Pryer*), 2 ♂, 1 ♀, Oiwake (*Pryer*) 1 ♀, (*Maries*) 1 ♂, 1 ♀, (*Jonas*) 1 ♂, 1 ♀ type *adaucta*; N. China, Shanghai (*Pryer*), 1 ♀; W. China, Hou-kou, 2 ♂; N.W. Himalayas, Hunza (*Sir M. Conway*), 1 ♀, Cashmir, Sind Valley, 1 ♂, 1 ♀, Dras (*Leech*), 1 ♂, 1 ♀. *Exp.* 26–38 millim.

Larva. Meyr. Brit. Lep. p. 109; Barrett, Lep. Brit. vi. p. 162, pl. 245. f. 3.

Green to purplish brown; dorsal line dark-edged; subdorsal line whitish, dark-edged below; spiracular line green or yellowish; subspiracular line white; head green, pink, or yellowish, brown-speckled. Food-plants: *Linaria*, *Centaurea*, *Ononis*, &c. 8, 9.

51. Chloridea phloxiphaga. (Plate LV. fig. 21.)

Heliothis phloxiphagus, Grote & Rob. Trans. Am. Ent. Soc. i. p. 187 (1867).
Heliothis phlogophagus, Grote, List of N.-American Moths, p. 36 (1882); Druce, Biol. Centr.-Amer., Het. i. p. 300; Smith, Cat. Noct. N. Am. p. 270.
Heliothis acesias, Feld. Reis. Nov. pl. 108. f. 42 (1874).
Heliothis luteitinctus, Grote, Proc. Ac. Nat. Sci. Phil. 1875, p. 426.
Heliothis interjacens, Grote, Bull. Bkln. Ent. Soc. iii. p. 30 (1880).
Heliothis armiger, Druce, Biol. Centr.-Am., Het. i. p. 299 (part.), nec Hübn.

Head and thorax olive-brown; pectus and legs paler; abdomen whitish irrorated with black, thickly on dorsum, the anal tuft tinged with rufous. Fore wing pale olive-brown; the subbasal line represented by black points below costa and cell, the antemedial line by points on the veins, the orbicular by three points in a triangle; the reniform indistinct or rather prominent, blackish, with points on its edges placed on the medial shade, which is angled at lower angle of cell, then oblique; an indistinct dentate postmedial line with black points on the veins at extremity of teeth, bent outwards below costa, angled inwards at vein 5 and incurved below 3, the area between it and the subterminal series of points slightly darker, this series with a dark mark on its inner edge at costa, slightly angled outwards at vein 7 and incurved below vein 3; a terminal series of black points; cilia dark brown. Hind wing ochreous white; the basal area streaked with black; a large black discoidal lunule; the terminal area broadly black, with slightly waved inner edge, and with a subterminal pale dentate mark between veins 4 and 2; cilia whitish, dark at base. Underside whitish; fore wing with streak below base of cell, orbicular, reniform, and postmedial band black; hind

wing with the discoidal lunule black ; a curved postmedial line with black patch beyond it extending to termen below vein 2.

Ab. 1. *interjacens*: pale ochreous tinged with rufous.

Ab. 2. *luteitincta*: hind wing with the ground-colour orange-yellow.

Hab. Br. Columbia ; U.S.A., C., W., & S. States, N. Illinois, 1 ♂, 1 ♀ type *luteitinctus*, Utah, Nebraska, Texas, Colorado, New Mexico, California (*Walsingham*), 4 ♂, 4 ♀, Havilah, 6 ♂, 3 ♀ type *interjacens* ; Mexico (*Hoege*), 1 ♂, 1 ♀, Milpas (*Forrer*), 1 ♂, 1 ♀, El Paso (*Godman*), 1 ♀, Godman-Salvin Coll. *Exp.* 32–36 millim.

Larva. Coquillett, Papilio, i. p. 56.

(Redescribed.) Head 2·7 millim., green, brownish freckled on the vertex, epistoma whitish. Body green, traces of whitish dorsal and subdorsal lines ; cervical shield not cornified. Skin white, granular. Stigmatal band broad, whitish green, white-edged below. Dorsal line obscure, geminate, blackish filled. Tubercles raised, conical, small, black. Spiracles black-rimmed.

Food-plant, *Grindelia squarrosa*. 7–8.—H. G. D.

52. Chloridea metachrisea, n. sp. (Plate LV. fig. 18.)

♀. Head and thorax greyish ochreous mixed with reddish brown ; abdomen fuscous brown with orange segmental bands, the ventral surface whitish irrorated with black. Fore wing greyish, suffused with olive-brown and irrorated with a few dark scales ; an obscure dark waved subbasal line ; the antemedial line strongly incurved in cell, and excurved below costa and cell and strongly above inner margin, the orbicular an obscure blackish spot with some points beyond it from subcostal nervure to inner margin towards which it becomes a waved line ; reniform with greyish centre and fuscous outline on a diffused brown patch extending to costa and with the obliquely waved medial shade from it to inner margin ; the postmedial line minutely dentate, strongly incurved below vein 4, and with the area between it and the lunulate subterminal line darker, this line having a dark patch on costa, slightly angled outwards at vein 7 and incurved below vein 2 ; a terminal series of black points. Hind wing deep orange ; the basal area suffused with black to the discoidal lunule ; a broad terminal black band incurved below vein 4 ; the inner area dark. Underside of fore wing orange ; the orbicular and reniform black ; the basal half of inner area and postmedial band fuscous.

Hab. Madagascar, Betsileo (*Cowan*), 1 ♀ type. *Exp.* 32 millim.

53. Chloridea peltigera.

Noctua peltigera, Schiff. Wien. Verz. p. 89 (1776) ; Hübn. Eur. Schmett., Noct. pl. 63. f. 310 ; Dup. Lép. Fr. vii. pl. 119. f. 5 ; Steph. Ill. Brit. Ent., Haust. iii. p. 109 ; Hmpsn. Moths Ind. ii. p. 175 ; Staud. Cat. Lep. pal. p. 221.

Phalæna-noctua alphea, Cram. Pap. Exot. iii. p. 99, pl. 259 F (1779).

Noctua florentina, Esp. Schmett. iv. pl. 135. f. 2 (1788).

Phalæna charmione, Stoll, Cram. Pap. Exot. v. p. 162, pl. 36. f. 10 (1791).
Noctua barbara, Fabr. Ent. Syst. iii. 2, p. 111 (1794).
Phalæna straminea, Donov. Brit. Ins. ii. pl. 61 (1813).

Head and thorax ochreous yellow tinged with rufous; abdomen ochreous white, dorsally tinged with brown. Fore wing ochreous, slightly tinged with rufous; the subbasal line represented by minute points on costa and median nervure; the antemedial line indistinct, with brown point on costa, angled outwards below costa and cell and above inner margin; claviform represented by a slight rufous mark, the orbicular by a brown point; the reniform with greyish centre and brown outline connected with costa by a brown mark with a striga on its outer edge; an oblique waved medial line from lower angle of cell to inner margin; the postmedial line dentate, with white points at extremity of teeth, bent outwards below costa, then oblique, with a rufous band on its outer side defining the subterminal line, which is angled outwards at vein 7 and slightly excurved at middle; a terminal series of black points and a more prominent spot above tornus. Hind wing ochreous white tinged with brown, the veins and discoidal lunule brown; the terminal area brown, with diffused inner edge and pale subterminal patch at middle; cilia white, with brownish line at base. Underside white; fore wing with the reniform black; both wings with brown band beyond the postmedial line.

Ab. 1. ♀. Hind wing orange-yellow.—S. Africa.

Hab. Europe, C. & Southern; Britain, Spain, 1 ♂, 1 ♀, Frey Coll., Gibraltar, 1 ♂, Sicily, 6 ♂, 1 ♀; Morocco, Tangier (*Leech*), 1 ♂, 1 ♀, Mogador (*Leech*), 2 ♂; Canaries (*Godman, Leech*), 1 ♂, 1 ♀; C. Colony, 1 ♂, 2 ♀; Asia Minor, Taurus, 1 ♂, Anatolia, Boz Dagh, 1 ♂, 1 ♀; Syria, 1 ♂, Lebanon (*Mrs. Nicholl*), 1 ♀; Persia, Fao (*Cumming*), 1 ♂; N.W. Himalayas, Dalhousie (*Harford*), 1 ♂, 1 ♀, Khairabad (*Yerbury*), 1 ♂; Nepal (*Hardwicke*), 2 ♂; Kutch, 1 ♂, 1 ♀. *Exp.* 34–40 millim.

Larva. Meyr. Brit. Lep. p. 109; Barrett, Lep. Brit. vi. p. 158, pl. 245. f. 4.

Green or ochreous reddish with white dots; dorsal and subdorsal lines darker; spiracular line white; head green or brownish. Food-plants: *Ononis*, *Pyrethrum*, *Arenaria*, &c. 5–8.

54. Chloridea nubigera.

Heliothis nubigera, Herr.-Schäff. Eur. Schmett. ii. p. 366 (1845); Ramb. Cat. Lép. S. And. pl. 12. f. 5; Hmpsn. Moths Ind. ii. p. 175; Staud. Cat. Lep. pal. p. 222.
Heliothis perigeoides, Moore, P. Z. S. 1881, p. 361.

Head and thorax ochreous tinged with brown; pectus white; abdomen white, dorsally irrorated with brown. Fore wing ochreous, tinged with rufous or greyish brown; an indistinct waved subbasal line from costa to submedian fold; a highly waved antemedial line with dark points on the veins; claviform with indistinct brown outline and sometimes a dark centre; orbicular and reniform with brown outline, the former round with dark point at centre, the

latter with the centre greyish and a brown patch above it on costa; an oblique waved line from lower angle of cell to inner margin; the postmedial line dentate, with whitish points at extremities of teeth, bent outwards below costa, excurved to vein 3, then incurved, and with a red-brown band on its outer edge defining the subterminal line, which is angled outwards at vein 7, dentate inwards to the postmedial line above vein 5 and incurved below vein 3; a terminal series of black points and more prominent spot above tornus. Hind wing white; the veins brown; the terminal area brown, with diffused inner edge and pale subterminal patch at middle; cilia white, with brownish line at base. Underside white; fore wing with the reniform black; both wings with brownish band beyond the postmedial line.

Hab. Spain; Canaries; Algiers (*Mrs. Nicholl*), 1 ♀; C. Russia, Krasnow (*Christoph*), 1 ♀; Armenia; Asia Minor, Lydia; Syria, Beyrout (*Lederer*), 1 ♂, 1 ♀; Somaliland (*Yerbury*), 1 ♂; N.W. Himalayas, Dalhousie (*Harford*), 1 ♀; Kutch, 2 ♂, type *perigeoides*. *Exp.* 30–40 millim.

Larva. Mill. Ann. Soc. Linn. Lyons, xviii. p. 35, pl. 104. ff. 9, 10.

Reddish brown, with slight dark dorsal line; subdorsal band alternately black and white except on 1st somite; a diffused brown sublateral band.

55. Chloridea scutuligera. (Plate LV. fig. 20.)

Heliothis scutuligera, Guen. Noct. ii. p. 180 (1852).
Heliothis errans, Wlk. xxxiii. 769 (1865).

Head and thorax ochreous, more or less strongly tinged with olive-brown; pectus and legs paler; abdomen ochreous, tinged with orange towards extremity, the ventral surface pale with dark irroration. Fore wing pale ochreous, suffused with olive-brown except in and beyond end of cell; the costa brown; a brown streak below base of cell; the subbasal and antemedial lines obsolete; the orbicular represented by a dark point; the reniform a black lunule with greyish centre, its lower angle produced, its upper edge usually connected with the costa by dark suffusion; the postmedial line indistinct, dentate, excurved to vein 3, then incurved, and usually with a series of prominent white points on its outer edge, and with the area beyond it brown to the pale subterminal line, which is angled outwards at vein 7 and incurved below vein 3; a terminal series of black points. Hind wing ochreous yellow, more or less tinged with rufous; a dark discoidal lunule usually present; a broad black terminal band with dentate ochreous patch at middle. Underside of fore wing with prominent black reniform; both wings with dark postmedial band, on hind wing angled outwards to termen above and below middle.

Hab. Namaqualand, O'oklep (*Lightfoot*), 1 ♂; Natal, Durban (*Leigh*), 1 ♀; Basutoland, Motsekua, 3 ♂, 1 ♀, Maseru, 3 ♂ (*Crawshay*); C. Colony, Knysna (*Trimen*), 2 ♂, 1 ♀ type *errans*, Annshaw (*Miss F. Barrett*), 1 ♀. *Exp.* 30 millim.

56. Chloridea armigera.

Noctua armigera, Hübn. Samml. Eur. Schmett., Noct. f. 370 (1827); Dup. Lép. Fr. vii. p. 119, ff. 6, 7; Druce, Biol. Centr.-Am., Het. i. p. 299; Hmpsn. Moths Ind. ii. p. 174; Staud. Cat. Lep. pal. p. 222; Smith, Cat. Noct. N. Am. p. 270.
Heliothis pulverosa, Wlk. xi. 688 (1857).
Heliothis conferta, Wlk. xi. 690 (1857).
Thalpophila rubrescens, Wlk. xv. 1681 (1858).
Heliothis uniformis, Wllgrn. Wien. ent. Mon. iv. p. 171 (1860).
Heliothis punctigera, Wllgrn. Wien. ent. Mon. iv. p. 171 (1860).
Heliothis umbrosus, Grote, Proc. Ent. Soc. Phil. i. p. 219 (1863).

Head and thorax olive-grey or pale reddish brown; abdomen white, dorsally tinged with fuscous or reddish brown. Fore wing olive-grey or pale reddish brown; an indistinct double waved subbasal line from costa to submedian fold; a double antemedial line angled outwards below costa and cell and above inner margin; the orbicular and reniform with brownish centres and outline, the former round, the latter with two striæ above it on costa; an oblique slightly waved median line from lower angle of cell to inner margin; a double dentate postmedial line, the teeth produced to slight white points on the veins, angled outwards at veins 7 and 4,

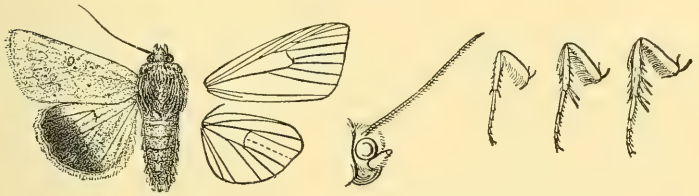


Fig. 18.—*Chloridea armigera*, ♂. ½. (From Moths Ind. vol. ii.)

then oblique, the area between it and the subterminal line usually darker, at all events towards costa, this line slightly angled outwards at vein 7 and excurved at median nervules; a terminal series of minute black points. Hind wing white; the veins brown; the terminal area broadly fuscous, with somewhat diffused inner edge and pale subterminal patch at middle often obsolescent or absent; cilia white, with brownish line at base. Underside of fore wing with the orbicular and reniform black; both wings with blackish band beyond the postmedial line except on costal area of hind wing.

Ab. 1. Fore wing with prominent angled dark brown medial band diffused on outer side.—Hawaii.

Ab. 2. *rubescens*. Hind wing with the ground-colour orange-yellow.—Australia.

(*a*) Head, thorax, and fore wing suffused with rufous.

(*b*) Head, thorax, and fore wing suffused with dark pink.

Hab. Canada; U.S.A. throughout, Texas, 5 ♂, 4 ♀, California, 1 ♀; Mexico (*Hoege*), 2 ♂, Morelas (*H. H. Smith*), 1 ♀, Milpas (*Forrer*), 1 ♂, Jalapa (*Trujillo*), 2 ♂, 2 ♀, Durango (*Becker*),

3 ♂, S^ta Maria (*Richardson*), 1 ♂; Guatemala (*Rodriguez, Champion*), 3 ♂, 3 ♀; Costa Rica (*Underwood*), 2 ♂; Panama, Chiriqui (*Champion*), 1 ♂, 1 ♀, Godman-Salvin Coll.; Jamaica, 1 ♀; Barbados (*Frampton*), 2 ♂; St. Vincent (*H. H. Smith*), 1 ♀; Venezuela, 1 ♀; Brazil, Rio, 1 ♀; Peru, Callao (*J. J. Walker*), 1 ♀; Chili, Coquimbo (*J. J. Walker*), 1 ♂, 1 ♀; C. Verdes, St. Vincent (*J. J. Walker*), 1 ♀; Europe, Central and Southern, Britain, France, Nice (*Leach*), 1 ♂, Germany, Zeller Coll., Spain, 1 ♂, 1 ♀, Frey Coll., Sicily, 1 ♂, S. Russia, Sarepta, 1 ♀; Madeira (*Meek*), 1 ♂; Canaries (*Leech*), 2 ♂; W. Africa, Congo (*Curror*), 1 ♂, 1 ♀; Soudan, Gebt el Meghahid (*Dunn*), 1 ♀; Abyssinia, 1 ♂; Br. E. Africa, Machakos (*Crawshay*), 2 ♂, 1 ♀, Tana R. (*Crawshay*), 1 ♀; N'Gamiland (*Lugard*), 1 ♂, 1 ♀; Transvaal (*Ross*), 1 ♂; Natal, Malvern (*Marshall*), 1 ♀, Durban (*Leigh*), 2 ♂; Basutoland, Masite (*Crawshay*), 1 ♀; C. Colony (*Dr. Smith*), 1 ♂, Knysna (*Trimen*), 1 ♂, Grahamstown, 1 ♂, C. Town, 2 ♂, 1 ♀, type *pulverosa*; Aden (*Yerbury*), 1 ♂; Syria, Lebanon, 1 ♂; Japan, Yokohama (*Jonas, Pryer*), 2 ♂, Fushiki (*Leech*), 1 ♀; E. China, Shanghai (*Pryer, J. J. Walker*), 1 ♂, 1 ♀, Chusan (*J. J. Walker*), 1 ♀; Formosa (*Hobson*), 2 ♀; W. China, Chang-yang (*Pratt*), 1 ♀, Washan (*Pratt*), 1 ♂; Kashmir, Gourais Valley (*Leech*), 1 ♂, Kuijar (*McArthur*), 1 ♀; N.W. Himalayas, Simla (*Swinhoe*), 1 ♂, 2 ♀, Dalhousie, 1 ♀, Akhor (*Yerbury*), 1 ♂, Campbellpur, 4 ♀, Dharmsala (*Hocking*), 1 ♂, 3 ♀, Deyra Dun, 2 ♀, Allahabad, 1 ♂, 1 ♀; Sikhim (*Russell*), 1 ♀; Afghanistan, Kandahar (*Roberts*), 1 ♂; Sind, Kurrachee (*Swinhoe*), 1 ♂, Kutch, 1 ♀; Bombay (*Swinhoe*), 1 ♂, Mhow, 1 ♀; Madras, 1 ♀; Nilgiris (*Hampson*), 2 ♂, 2 ♀; Ceylon (*Green*), 1 ♂, 1 ♀; Perak, Kinta Valley (*Ridley*), 1 ♀; Singapore (*Ridley*), 1 ♀; Java (*Horsfield*), 3 ♂, 3 ♀; N. Australia, Pt. Darwin, 1 ♀, Condillac I. (*J. J. Walker*), 1 ♂; W. Australia, Sherlock R. (*Dr. Clements*), 1 ♀, Freemantle (*J. J. Walker*), 2 ♂, 1 ♀; Queensland, Brisbane (*Turner*), 1 ♂, 2 ♀; N. S. Wales, Moreton B., 2 ♂, 2 ♀, type *rubrescens*, Sydney (*Raynor*), 6 ♂, 6 ♀; Victoria, Gisborne (*Lyell*), 1 ♂; Tasmania, Launceston, 1 ♂; N. Zealand, Dunedin (*Purdie*), 1 ♂, Auckland, 3 ♂, 4 ♀, type *conferta*; Gilbert Is. (*Woodford*), 2 ♂, 3 ♀; Hawaii (*Blackburn, Perkins*), 1 ♂, 4 ♀. *Exp.* 30–42 millim.

Larva. Meyr. Brit. Lep. p. 108; Barrett, Lep. Brit. vi. p. 152, pl. 245. f. 1.

(Redescribed.) Head 3 millim., pale brown, reticulations pale, the sides spotted with darker brown and also the vertex. Body dull green; dorsal line fine, white, broadly edged with black; pale mottlings in lateral space, scarcely forming lines; an even dark shade above the broad whitish substigmatal line, broadly greenish-centred; white specks in subventral space. Cervical shield black, with white subdorsal line and white speckles. On somites 4 to 11 a black shade from tubercle i–iii, fainter on somite 10. Tubercles i–iv large, black, conically elevated; spiracles black. Dorsum minutely pilose. Thoracic feet blackish.

Food-plants: corn, cotton, tomatoes, *Rosa*, *Reseda*, *Calamintha*, &c. 6–7.—H. G. D.

57. Chloridea assulta. (Plate LV. fig. 22.)

Heliothis assulta, Guen. Noct. ii. p. 178 (1852).
Heliothis temperata, Wlk. xi. 689 (1857); Swinh. Cat. Het. Mus. Oxon. ii. p. 591.
Heliothis separata, Wlk. xi. 691 (1857); Semp. Schmett. Phil. ii. pl. lx. f. 1.
Heliothis succinea, Moore, P. Z. S. 1881, p. 362.

Head and thorax orange tinged with red-brown; fore tibiæ brown above; abdomen orange. Fore wing orange tinged with red-brown; the veins rufous; a double curved subbasal line from costa to submedian fold; the antemedial line double, strongly waved, the inner line indistinct; orbicular and reniform with dark centres and brown outline, the former round; the medial line oblique from costa to median nervure, where it is angled, then incurved; the postmedial line double, bent outwards below costa, slightly incurved at discal fold, incurved below vein 4, and with its inner line minutely waved and slightly angled outwards at vein 1, the area beyond it brownish to the subterminal line, which is angled outwards at vein 7, dentate inwards to the postmedial line at vein 5 and outwards nearly to termen on veins 4, 3, 2; cilia rufous. Hind wing orange-yellow; the terminal area broadly black with somewhat sinuous inner edge, with postmedial line just before it between veins 6 and 2. Underside of fore wing with the orbicular and reniform black; both wings with blackish band beyond the postmedial line, except on inner area of fore wing and costal area of hind wing.

Hab. W. Africa, Congo (*Curror*), 1 ♀; Japan, Yokohama (*Jonas, Pryer*), 3 ♀; Corea, Gensan (*Leech*), 2 ♂; E. China, Shanghai, 1 ♀, Ichang (*Pratt*), 1 ♂, 2 ♀; Formosa (*Hobson*), 2 ♂; N.W. Himalayas, Kulu, Sultanpur (*G. Young*), 2 ♀, Allahabad, 1 ♂, 1 ♀; Bhutan (*Dudgeon*), 1 ♂; Bombay (*Swinhoe*), 1 ♂, 1 ♀ type *succinea*; Ceylon (*Pole*), 3 ♀; Burma, Hsipaw (*De Nicéville*), 1 ♀; Java (*Horsfield*), 1 ♀; Queensland, Rockhampton; Samoa, 2 ♂ type *separata*; Tahiti (*J. J. Walker*), 1 ♂. *Exp.* 24–36 millim. Type † in Mus. Paris.

Larva. Hmpsn. Ill. Het. B. M. ix. p. 92, pl. 176. f. 22.

Pale greyish green, the dorsal area browner; a broad yellowish lateral stripe from 8th to 12th somite; a minute prominent subdorsal black spot on each somite, two spots on the lateral stripe and one below it; head pale red. Food-plant, *Physalis peruviana*.

58. Chloridea xanthiata. (Plate LV. fig. 23.)

Heliothis xanthiata, Wlk. xxxiii. 770 (1865).

♀. Vertex of head and front of thorax olive-yellow; palpi, frons, and hinder part of thorax rufous; pectus and legs yellowish, the tibiæ and tarsi brown tinged with pink; abdomen ochreous white, dorsally tinged with fuscous and towards extremity with pink. Fore wing olive-yellow; the inner margin fuscous suffused with rufous and with rufous above it; a waved rufous subbasal line from costa to submedian fold; the antemedial line excurved below

costa and more strongly below cell and above inner margin; the orbicular and reniform represented by small brown spots with rufous points round them, the latter with rufous mark just before it on costa; an oblique minutely-waved medial line from lower angle of cell to inner margin; the postmedial line dentate, bent outwards below costa, angled inwards at vein 5 and incurved below vein 4, with rufous suffusion on its outer edge on costa extending to apex; a curved subterminal series of points; cilia pinkish. Hind wing white; the veins brownish; a dark discoidal point; the inner margin fuscous; the terminal area broadly black with nearly straight inner edge; the veins towards termen streaked with red; cilia pink. Underside of fore wing with the orbicular, reniform, a streak below middle of cell, and a diffused postmedial band black; hind wing with the terminal area purplish pink.

Hab. Natal, Karkloof (*Marshall*), 1 ♀. *Exp.* 34 millim.

59. **Chloridea chilensis**, n. sp. (Plate LV. fig. 24.)

♂. Head and thorax ochreous strongly tinged with crimson, and the hairs tipped with grey; tibiæ and tarsi tinged with pink; abdomen ochreous, the dorsal crest at base pink. Fore wing olive ochreous; the costal area pink, with some ochreous and brown points on costa; a dark subbasal point below the cell; antemedial points in submedian fold and on vein 1; the orbicular a small dark spot; reniform somewhat quadrate; a curved postmedial series of dark points; a more or less distinct subterminal punctiform line, angled outwards at vein 7 and excurved at middle; a terminal series of dark points; cilia pink. Hind wing pale ochreous; the veins streaked with brown; the terminal area broadly fuscous with diffused inner edge; cilia ochreous. Underside of fore wing with the orbicular, reniform, and postmedial band fuscous.

♀. Hind wing almost wholly suffused with fuscous.

Hab. Chili, Coquimbo (*J. J. Walker*), 2 ♂, 1 ♀ type. *Exp.* 36 millim.

60. **Chloridea virescens.**

Noctua virescens, Fabr. Spec. Ins. ii. p. 216 (1781); Smith, Cat. Noct. U.S. p. 268.
Phalæna rhexia, Smith & Abb. Ins. Georgia, ii. p. 199, pl. 100 (1792); Druce, Biol. Centr.-Am., Het. i. p. 298.
Aspila subflexa, Guen. Noct. ii. p. 175 (1852).
Xanthia viridescens, Wlk. x. 465 (1856).
Xanthia prasina, Wlk. x. 465 (1856).
Xanthia pyraloides, Wlk. x. 466 (1856).
Aspila tergemina, Feld. Reis. Nov. pl. 108. f. 55 (1874).
Heliothis spectanda, Streck. Lep. Rhop. & Het. p. 122 (1875).
Chloridea molochitina, Berg, Ann. Soc. Arg. xiv. p. 282 (1882).
Chloridea distincta, Schaus, J. N. Y. Ent. Soc. vi. p. 117 (1898).

Head and thorax ochreous tinged with green; palpi and antennæ whitish irrorated with red; frons ochreous; pectus and legs ochreous white, the tibiæ and tarsi tinged with red; abdomen ochreous, the ventral surface whitish. Fore wing pale ochreous tinged

with green; the costal edge reddish; an indistinct greenish subbasal line from costa to submedian fold; oblique antemedial, medial, and postmedial reddish lines, the last two angled inwards to costa and the 1st and 3rd with pale bands on their inner edge; claviform, orbicular, and reniform indistinctly outlined with greenish, the two former round, the last large; a very indistinct pale waved subterminal line; cilia red at tips towards apex; a terminal series of black points, often obsolete. Hind wing semihyaline white; the veins towards termen and a diffused terminal band narrowing to apex and tornus red. Underside of fore wing with more or less prominent reddish discoidal spot and postmedial band.

Ab. 1. *subflexa*. Hind wing without terminal band.

Ab. 2. *rhexia*. The red tones replaced by fuscous, the lines of fore wing dark and more diffused, and the pale bands more distinct.

Ab. 3. *spectanda*=*molochitina*. Fore wing with whitish band on inner edge of medial line also; the postmedial band arising almost from apex.

Ab. 4. *distincta*. More uniform brownish ochreous.

Hab. Canada; U.S.A., Middle, Central, and Southern States, 1 ♂, 4 ♀, Alabama, 1 ♂, Kansas, Colorado, California; Mexico, Cordova (*Kumeli*, *Trujillo*), 2 ♀, Guerrero (*H. H. Smith*), 1 ♀, Coatepec (*Brooks*), 1 ♂, Jalapa (*Trujillo*), 1 ♂, 1 ♀; Guatemala (*Champion*, *Rodriguez*), 3 ♂, 1 ♀, Godman-Salvin Coll.; Haiti (*Tweedie*), 1 ♂, 1 ♀, type *viridescens*; St. Croix; St. Lucia, 1 ♀; St. Vincent (*H. H. Smith*), 1 ♀; Grenada (*H. H. Smith*), 1 ♂, 2 ♀; Grenadines, Union I. (*H. H. Smith*), 1 ♀; Venezuela, 1 ♂ type *pyralidoides*; Brazil, Santarem (*Bates*), 2 ♂, 3 ♀ type *prasina*, São Paulo (*Jones*), 2 ♀, Castro Paraña, type† *distincta* in Coll. Schaus; Argentina, Goya (*Perrins*), 1 ♂; Peru, Callao (*J. J. Walker*), 3 ♂. *Exp.* 28–36 millim.

Larva. Riley, Am. Ent. iii. p. 7.

(Redescribed.) Head green, tubercle ii black. Body green, a dorsal and lateral blackish shade. Substigmatal band broad, white, reddish filled; subventral area pale. Tubercles large, conical, black; cervical shield black, cut by pale dorsal line. Feet blackish. Food-plants: *Rhexia*, *Solanum sieglinge*, and Tobacco.—H. G. D.

Genus **OXYLOS**.

	Type.
Oxylos, Grote, Check List Noct. p. 19 (1875)	*citrinellus*.

Proboscis fully developed; palpi oblique to beyond frons, the 2nd joint slightly fringed with hair below; frons with slight rounded prominence; eyes large, round; antennæ of male ciliated; head and thorax clothed with hair; fore tibiæ short and broad, with two long curved claws and three spines on inner side and four claws on outer; mid and hind tibiæ strongly spined. Fore wing with the apex somewhat produced; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

61. Oxylos citrinellus.

Heliothis citrinellus, Grote & Rob. Trans. Am. Ent. Soc. iii. p. 180, pl. ii. f. 79 (1870); Smith, Cat. Noct. N. Am. p. 272.

♂. Head and thorax very pale yellow; abdomen white, the anal tuft ochreous. Fore wing uniform very pale yellow. Hind wing white, with black discoidal lunule and terminal band leaving some

Fig. 19.—*Oxylos citrinellus*, ♂. ½.

white on termen towards tornus. Underside of fore wing with the costal area tinged with fuscous, the orbicular and reniform stigmata and subterminal and terminal bands fuscous.

Hab. U.S.A., Texas, 1 ♂, Grote Coll., Colorado. *Exp.* 30 millim.

Genus **CHLOROCLEPTRIA**, nov.

Type, *C. simplex.*

Proboscis fully developed; palpi obliquely porrect, extending well beyond frons, the 2nd joint fringed with hair below, the 3rd moderate; frons with rounded prominence; eyes large, rounded; antennæ of male ciliated; head and thorax smoothly clothed with hair; fore tibiæ with a long curved claw and two spines on inner side and four claws on outer; mid and hind tibiæ spined. Fore wing with vein 3 from before angle of cell, 5 from above angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

62. Chlorocleptria simplex.

Schinia simplex, Smith, Trans. Am. Ent. Soc. xviii. p. 129 (1891); id. Cat. Noct. N. Am. p. 276.

♂. Head and thorax yellowish white, tinged with pale green; palpi, pectus, legs, and abdomen pale yellow. Fore wing pale yellow-green, the costal area whitish green. Hind wing ochreous

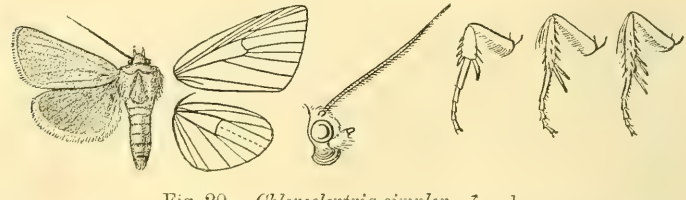


Fig. 20.—*Chlorocleptria simplex*, ♂. ½.

yellow, with some fuscous scales just below and in end of cell and on terminal area especially towards apex. Underside yellow, the cilia of fore wing pale green.

Hab. U.S.A., Colorado, Colorado Springs, 1 ♂. *Exp.* 32 millim.

Genus **DASYPOUDÆA.**

Type.
Dasypoudæa, Smith, Trans. Am. Ent. Soc. x. p. 213 (1883)..... *lucens*.

Proboscis fully developed; palpi obliquely porrect to well beyond frons, and fringed with hair below; frons with rounded prominence; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with thick hair, the latter rather quadrately scaled and with slight metathoracic crests; legs with long hair, the tibiæ spined; the fore tibiæ rather short and broad, with long curved claw on inner side and short claw on outer; abdomen in the type species with dorsal crest on basal segment. Fore wing short and broad, the apex rounded; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

A. Fore wing with the ground-colour crimson ..... *lucens*.
B. Fore wing with the ground-colour green ..... *meadi*.

63. **Dasypoudæa lucens.**

Heliothis lucens, Morr. Proc. Ac. Nat. Sci. Phil. 1875, p. 69; Smith, Cat. Noct. N. Am. p. 286.
Tamila luxuriosa, Grote, Can. Ent. xiv. p. 175 (1882).

♀. Head and thorax clothed with deep crimson and bluish-white hair; pectus with white and brownish hair; legs with white and pinkish hair; abdomen brown irrorated with yellowish-white, the dorsal crest deep crimson and bluish white, the ventral surface

Fig. 21.—*Dasypoudæa lucens*, ♂. ½.

white mixed with pink. Fore wing deep crimson suffused with bluish white, the veins streaked with white; a dentate subbasal white line from costa to submedian fold; the antemedial line dentate; an ill-defined crimson discoidal lunule; the postmedial line minutely dentate, excurved from below costa to vein 4, then strongly incurved; an irregularly dentate subterminal whitish line angled outwards at veins 7, 6, 4, 3, 2, and inwards in discal and submedian folds; cilia intersected with white. Hind wing yellowish, with some black-brown suffusion at base conjoined to the large discoidal lunule; the terminal area black-brown, with irregular inner edge and waved yellowish subterminal line towards tornus; cilia white at tips. Underside yellowish white, with patch below the cell, orbicular, reniform, and curved postmedial band blackish, some crimson on termen towards apex; hind wing with crimson spot on middle of costal area and postmedial and subterminal lines, becoming a blackish band towards tornus, the large discoidal lunule black.

Hab. U.S.A., Racine (*Dr. Hoy*), 1 ♀, Nebraska, Montana, Colorado, New Mexico. *Exp.* 32 millim.

64. Dasypoudæa meadi. (Plate LV. fig. 25.)

Heliothis meadi, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 121, pl. 3. f. 5 (1873); Smith, Cat. Noct. N. Am. p. 286.

Head and thorax clothed with pale greenish-yellow and white hair; pectus, legs, and abdomen white. Fore wing pale yellow-green, tinged with black in places; a silvery-white mark at base conjoined at median nervure to the curved subbasal white line defined on outer side by some black scales; the antemedial line curved and defined by some black scales, expanding into a triangular white mark on costal area; the medial area with whitish patches on costal area and in and below cell, defining the green orbicular and reniform stigmata; the postmedial line silvery white, defined by black scales on outer side, acutely angled outwards beyond lower angle of cell and incurved above and below that point; the terminal area with white patches at apex and from vein 4 to tornus, defining a dentate subterminal line; cilia chequered white and green. Hind wing white; the basal and costal areas suffused with black confluent with the large black discoidal lunule; the terminal area black, its inner edge rather irregular and indented towards tornus and with white subterminal patch between veins 2 and 4. Underside white; fore wing with patch below the cell, orbicular, reniform, and postmedial band black; hind wing with discoidal lunule and postmedial band towards tornus black.

Hab. U.S.A., Oregon, 1 ♂, Montana, Colorado, 1 ♀. *Exp.* 28 millim.

Genus CHARICLEA.

	Type.
Chariclea, Curt. Brit. Ent. pl. 76 (1825)	*delphini.*
Periphana, Hübn. Verz. p. 247 (1827)	*delphini.*

Proboscis fully developed; palpi obliquely porrect to just beyond frons and fringed with hair below; frons with rounded prominence with corneous plate below it; eyes large, rounded; antennæ of male minutely ciliated; head and thorax clothed with hair only, the latter rather quadrately, and with crests on pro- and metathorax; tibia thickly fringed with hair, the fore tibiæ short and broad, with long curved claw on inner side and short claw on outer, the mid and hind tibiæ very slightly spined; abdomen dorsally clothed with rough hair at base and with crest on 1st segment. Fore wing with the apex moderately produced; veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

65. Chariclea delphini.

Noctua delphinii, Linn. Syst. Nat. x. p. 518 (1758); Esp. Schmett. iv. pl. 175. ff. 1–4; Hübn. Eur. Schmett., Noct. pl. 42. f. 204 & pl. 137. f. 622; Dup. Hist. Nat. Lép. Fr. vii. pl. 110. f. 1; Steph. Ill. Brit. Ent., Haust. iii. p. 92; Curt. Brit. Ent. pl. 76; Staud. Cat. Lep. pal. p. 223.

Head and thorax ochreous white, the palpi, frons, and metathorax tinged with rufous, the tegulæ and patagia with olive; legs tinged

with purplish pink; abdomen whitish, dorsally tinged with olive, the sides purplish pink. Fore wing whitish, strongly suffused with magenta, most deeply on basal area and beyond the postmedial line; a double highly-curved dentate antemedial line; orbicular small, eliptical, and defined by pink, connected with the reniform by a streak on subcostal nervure, the latter purple defined by pink and by black on upper part of outer side, where it is produced to a

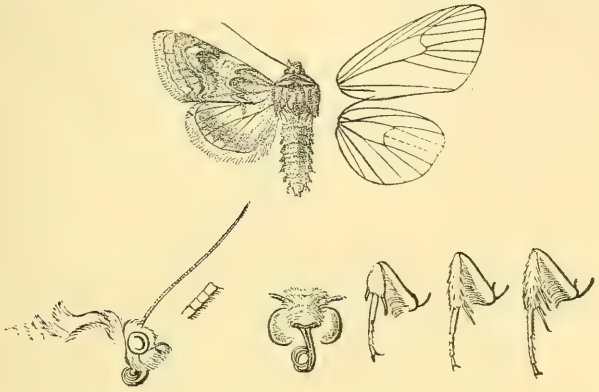


Fig. 22.—*Charicleα delphini* ♂ ½.

lobe, the lower part slightly produced on inner side, and with sinuous line from it to inner margin; the postmedial line double, excurved from below costa to vein 4, then strongly incurved, the area between it and subterminal line deep magenta, brownish towards costa; the subterminal line excurved between veins 7 and 4, then incurved; a fine terminal line; cilia tinged with ochreous. Hind wing white, the veins and inner margin brown; the terminal area fuscous brown, the termen itself magenta; cilia white. Underside of both wings with the ground-colour white.

Hab. Britain, South; France; Germany, Zeller & Frey Colls.; Switzerland, Zeller Coll.; Italy; Sweden; Russia, Livonia; Greece (*Merlin*); Armenia; Asia Minor, Pontus. *Exp.* 34–38 millim.

Subsp. 1. *darollesi*, Oberth. Ét. Ent. i. p. 49, pl. 4. f. 5 (1876).

Very much paler.

Hab. Algiers; Armenia; W. Turkestan, Ferghana.

Larva. Barrett, Lep. Brit. vi. p. 144.

Slender; violet-grey, with an interrupted black dorsal line edged with yellow; each somite with four large black dots; sides paler, with broad yellow sublateral band with five large black dots above it on each somite; head yellow, with three large black dots and border on each hemisphere behind, frontal plate black; dorsal plate black, bisected by a yellow line; anal plate yellow, dotted with black. Food-plant, flowers and seed of *Delphinium consolida*.

Genus ÆDOPHRON.

Type.
Ædophron, Led. Noct. Eur. p. 180 (1857) ..... *rhodites.*

Proboscis fully developed; palpi porrect to just beyond frons, fringed with long hair below; frons with rounded prominence with corneous plate below it produced at sides into lateral walls; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with long hair; fore tibiæ with long curved claw on outer side and another at end of 1st joint of tarsus; mid and hind tibiæ slightly spined; abdomen clothed with rough hair. Fore wing with the apex moderately produced; vein 3 from close to angle of cell; 5 from well above angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

A. Fore wing prominently streaked with pink..... *rhodites.*
B. Fore wing with slight dusky streaks.
  a. Fore wing with dark discoidal bar ..... *venosa.*
  b. Fore wing without dark discoidal bar ..... *phlebophora.*

66. Ædophron rhodites.

Heliothis rhodites, Ev. Bull. Soc. Mosc. 1851, p. 635; Staud. Cat. Lep. pal. p. 223.
Simyra aurorina, Herr.-Schäff. Schmett. Eur. Suppl. f. 579 (1851).

♂. Head and thorax dull pink; pectus and legs whitish; abdomen whitish, dorsally tinged with brown. Fore wing purplish pink the medial part of costal area greyish; the cell, a streak below basal half of vein 1, another below vein 2, and others above

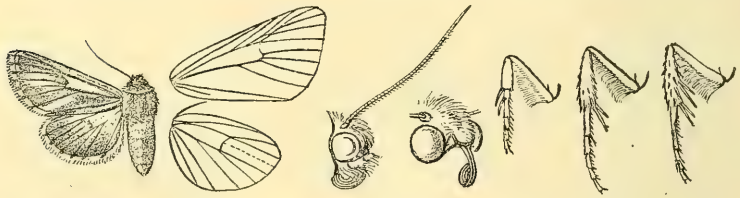


Fig. 23.—*Ædophron rhodites*, ♂. ¼.

and below vein 5 pale yellow; some yellowish spots on termen; cell yellow intersected with pink. Hind wing white, suffused with fuscous except in cell and on costa; cilia white intersected with brown. Underside white, the veins brownish, the terminal area tinged with pink.

Hab. Russia, Central and Eastern, Astrabad, 1 ♂; Armenia; Asia Minor, Pontus, Taurus; Persia. *Exp.* 32 millim.

67. Ædophron venosa.

Ædophron venosa, Christ, Stett. ent. Zeit. 1887, p. 165; id. Rom. Mém. v. p. 38, pl. 2. f. 9; Staud. Cat. Lep. pal. p. 223.

Head and thorax pale ochreous yellow; abdomen yellowish white. Fore wing pale ochreous yellow, the veins finely streaked

with brown; an oblique dark discoidal bar. Hind wing yellowish white, the veins streaked with brown. Underside white, the veins slightly streaked with brown.

Hab. Armenia; W. Turkestan, Transcaspia, 1 ♂. *Exp.* 30 millim.

68. Ædophron phlebophora.

Ædophron phlebophora, Led. Wien. ent. Mon. ii. p. 144, pl. 2. f. 9 (1858); Staud. Cat. Lep. pal. p. 223.

Head and thorax bright sulphur-yellow; antennæ ochreous; abdomen whitish, the extremity and ventral surface yellow. Fore wing sulphur-yellow, the veins more or less strongly tinged with brown. Hind wing white tinged with brown; the veins brown; the termen suffused with yellow.

Hab. Armenia; Asia Minor, 3 ♂, 6 ♀; Syria, 2 ♂, Mardin; Persia. *Exp.* 32–34 millim.

Larva. Staud. Hor. Ent. Soc. Ross. xiv. p. 401 (1878).

Head pale brown, the segments with darker margins; body greenish, with red-brown markings, paler towards extremity, forming bands on each somite, sharply defined below, toothed and with a pale point at the stigmata; a prominent dorsal line; sublateral area tinged with brown; the warts each with a short hair. Food-plant, *Phlomis*.

Genus RHODOPHORA.

	Type.
Alaria, Westw. Jardine's Nat. Libr. xxxii. p. 200 (1841), non descr., nec Schrank, Vermes, 1788	*gauræ*.
Rhodophora, Guen. Noct. ii. p. 170 (1852)	*gauræ*.

Proboscis fully developed; palpi porrect, reaching just beyond the frons and fringed with hair below; frons with slight rounded prominence and corneous plate below it; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with hair; fore tibiæ rather short and broad, spined at side and with long curved inner claw and short outer claw; mid and hind tibiæ spined. Fore wing with the apex somewhat produced and acute; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

A. Hind wing pale.
  a. Fore wing with the terminal area pink ..... *gauræ*.
  b. Fore wing with the terminal area yellow ..... *florida*.
B. Hind wing blackish ..... *felicitata*.

69. Rhodophora gauræ.

Phalæna gauræ, Smith & Abb. Insects Georgia, ii. p. 197, pl. 99 (1797); Westw. Jardine's Nat. Libr. xxxii. p. 200, pl. 24. f. 4; Smith, Cat. Noct. N. Am. p. 272.
Porphyrinia matutina, Hübn. Zütr. p. 35, ff. 557, 558 (1827).

Head and thorax very pale yellow; patagia and metathorax orange posteriorly; pectus, legs, and abdomen white, the tibiæ and

tarsi tinged with pink. Fore wing very pale yellow; the basal area deep rose-pink down to submedian fold, emitting streaks on subcostal and median nervures, and with some pink below its extremity; an oblique very deep pink postmedial band arising from

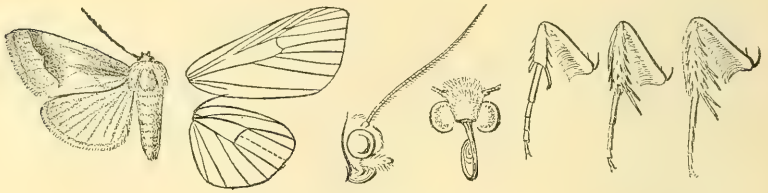


Fig. 24.—*Rhodophora gauræ*, ♂. ½.

costa near apex, angled inwards in discal fold, almost obsolete below submedian fold, and bent outwards to inner margin; the terminal area suffused with pink; cilia pink. Hind wing white; the terminal area more or less suffused with pink down to vein 2. Underside of fore wing with the costal and terminal areas pink.

Hab. U.S.A., S. States, Georgia, 3 ♂, 3 ♀ (*Doubleday*), Colorado. *Exp.* 34 millim.

Larva (redescribed).—Head 3·5 millim., brown, with irregular darker blotches over the lobes. Body pale orange, a sharp transverse black stripe in the centre of each segment to the subventral fold, and more obscure bands in the incisures. A rounded subdorsal spot on anterior edge of somite 1; feet black marked.

Food-plant, *Gaura*.—H. G. D.

70. Rhodophora florida. (Plate LV. fig. 26.)

Rhodophora florida, Guen. Noct. ii. p. 171, pl. 9. f. 7 (1852); Smith, Cat. Noct. N. Am. p. 272.

Head, thorax, and abdomen ochreous white; palpi pink; head and tegulæ tinged with pink; the pectus, legs, and ventral surface of abdomen pink. Fore wing rose-pink, with some ochreous yellow at base of inner margin; traces of a Y-shaped medial yellowish band often present defining the reniform stigma and not reaching costa; the terminal area ochreous yellow, with oblique, rather irregular inner edge. Hind wing yellowish white. Underside with the costal area of both wings more or less suffused with pink.

Hab. Canada, Orilla (*Bush*), 2 ♀; U.S.A., Eastern States, 4 ♂, 2 ♀, N. York (*Doubleday*), 1 ♂ type, Utah. *Exp.* 34 millim.

Larva. Saunders, Can. Ent. ii. 6 (1869).

Head pale green; body green, with dorsal darker vascular line; lateral line faint, dark; a reddish lateral patch on joint 2. Skin translucent, furnished dorsally with fine pile.

Food-plant, flowers of *Œnothera*.—H. G. D.

*71. Rhodophora felicitata. (Plate LXIX. fig. 16.)

Alaria felicitata, Smith, Trans. Am. Ent. Soc. xxi. p. 86, pl. vi. f. 1 (1894).

♀. Frons yellowish; vertex of head pink; tegulæ pink tipped with olivaceous; thorax olive-yellow; abdomen with whitish hair at base. Fore wing with the basal area rosy pink, extending on costa and inner margin to the terminal line, on the disk merging into olive-yellow, which becomes deeper towards termen; lines and stigmata absent. Hind wing blackish, the cilia white. Underside of fore wing blackish, the costal area irrorated with pink; cilia yellow; hind wing white, the costal area irrorated with pink.

Hab. U.S.A., S. Utah. *Exp.* 25 millim. This species is unknown to me, figured from a drawing from type in Brooklyn Inst. Arts & Sci.

Genus THYREION.

	Type.
Thyreion, Smith, Trans. Am. Ent. Soc. xviii. p. 121 (1891).....	*snowi.*

Proboscis fully developed; palpi porrect to just beyond the frons and fringed with hair below; frons with rounded prominence with corneous plate below it; eyes large, rounded; antennæ of male serrate and fasciculate; head and thorax thickly clothed with hair; fore tibiæ short and broad, with long curved claw at extremity on inner side and three claws on outer; mid and hind tibiæ spined. Fore wing usually short and broad, the costa somewhat excised beyond middle and the termen below apex; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 rather strongly anastomosing with the cell, then connected with it by an oblique bar in *T. snowi.*

A. Fore wing with the ante- and postmedial lines almost obsolete.
  a. Hind wing with the termen tinged with pink ..... *snowi.*
  b. Hind wing without pink on termen ..... *rosea.*
B. Fore wing with the ante- and postmedial lines prominent ..... *ligeæ.*

72. Thyreion snowi.

Ædophron snowi, Grote, Proc. Ac. Nat. Sci. Phil. 1875, p. 422; id. Ill. Essay, p. 65, pl. iii. f. 37; Smith, Cat. Noct. N. Am. p. 268.

♀. Head and thorax very pale yellow; pectus, legs, and

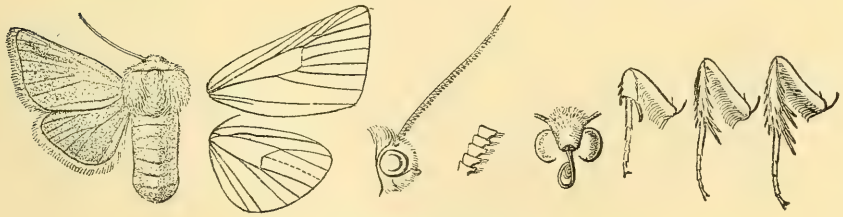


Fig. 25.—*Thyreion snowi*, ♂. ½.

abdomen yellowish white. Fore wing very pale yellow; the basal area with pale rose-pink streaks on subcostal and median nervures

and vein 1; traces of an oblique pink antemedial line across submedian interspace; a pink streak beyond the cell in discal fold to the faint postmedial line, which is oblique from costa near apex to submedian fold, where it is angled. Hind wing yellowish white tinged with fuscous, the terminal area with pink. Underside of fore wing suffused with fuscous, the apex with pink.

Hab. U.S.A., Kansas, 1 ♀ type. *Exp.* 36 millim.

73. Thyreion rosea. (Plate LV. fig. 27.)

Thyreion rosea, Smith, Trans. Am. Ent. Soc. xviii. p. 121 (1891); id. Cat. Noct. N. Am. p. 268.

Head and thorax very pale yellow; palpi and fore legs tinged with pink; antennæ fulvous; abdomen white mixed with fuscous. Fore wing very pale yellow, with diffused blood-red streak below base of cell and traces of an oblique postmedial band as patches in discal and submedian folds. Hind wing fuscous brown; the cilia white. Underside of fore wing fuscous brown except inner area; hind wing white, the inner area tinged with purplish pink, especially towards tornus.

Hab. U.S.A., Colorado, 1 ♀, S. Park. *Exp.* 34 millim.

Larva (original).—Head round, bilobed, compact and smooth, shining dark brown, sutures and rims of lobes posteriorly blackish. Cervical shield large, transverse, rounded before, scarcely notched behind, shining light brown, the two detached setæ on the lower side not on a shield. Thoracic feet light brown. Body opaquely white; tubercles small, brown, with short dark setæ. Anal plate shining brown with dark tubercles. Spiracles brown-rimmed. Feet normal, the crochets in a neat half-circle on inner side of planta. Tubercle iv at lower corner of spiracle.

Food-plant, *Allium*, eating within the leaf and eventually down to the bulb. At Denver, Col.—H. G. D.

74. Thyreion ligeæ. (Plate LV. fig. 28.)

Schinia ligeæ, Smith, Insect Life, v. p. 326, f. 2 (1893).

♂. Head, thorax, and abdomen ochreous white. Fore wing rather narrow, silky white; the basal area suffused with dull red towards the antemedial line, which is oblique from costa to just below cell, where it is sharply angled, then inwardly oblique; the postmedial line defined by a dull red band on outer side, excurved from costa to vein 4, then incurved. Hind wing suffused with fuscous brown; the cilia yellowish white. Underside of fore wing suffused with fuscous except the margins; hind wing slightly tinged with fuscous; an indistinct discoidal bar.

Hab. U.S.A., California, Argus Mts., 1 ♂. *Exp.* 28 millim.

Genus RHODODIPSA.

Type.

Rhododipsa, Grote, Bull. Geol. Surv. iii. p. 797 (1877) ..... *volupia.*

Proboscis fully developed; palpi obliquely upturned to well in front of frons, the 2nd joint fringed with hair in front; frons with rounded prominence with corneous plate below it; eyes large, rounded; head and thorax roughly clothed with hair mixed with a few scales; antennæ of male ciliated; fore tibiæ short and broad, with long curved claw and two spines on inner side, and four claws diminishing towards base on outer; mid and hind tibiæ strongly spined. Fore wing with the apex somewhat produced and acute; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

A. Hind wing crimson.
  a. Fore wing with the medial area white ..... *miniana.*
  b. Fore wing with the medial area crimson ..... *volupia.*
B. Hind wing fuscous.
  a. Fore wing with the markings brownish ochreous ..... *masoni.*
  b. Fore wing with the markings white ..... *aden.*

*75. Rhododipsa miniana. (Plate LV. fig. 29.)

Rhododipsa miniana, Grote, Pap. i. p. 175 (1881); id. Pap. ii. p. 64, pl. 1. ff. 1, 2; Smith, Cat. Noct. N. Am. p. 273.

♀. Head, thorax, and abdomen orange-yellow. Fore wing orange-yellow; the medial area white, with slightly curved medial yellow line, expanding into a diffused patch on outer side towards costa; a blood-red subterminal line dentate towards costa, incurved at discal fold, then excurved and somewhat dentate. Hind wing bright blood-red, the basal and inner areas orange-yellow; cilia yellow at base, white at tips. Underside of fore wing bright blood-red, except marginal areas which are yellow; hind wing yellow, with diffused blood-red in lower part of cell, below the cell, and thence to termen.

Hab. U.S.A., New Mexico, Las Conces, in Coll. J. B. Smith. *Exp.* 24 millim.

76. Rhododipsa volupia.

Alaria volupia, Fitch, 12th Rep. Trans. N. Y. State Agr. Soc. 1857, pp. 900–908 (1858); Grote, Ill. Essay, p. 62, pl. iii. f. 33; Smith, Cat. Noct. N. Am. p. 273.

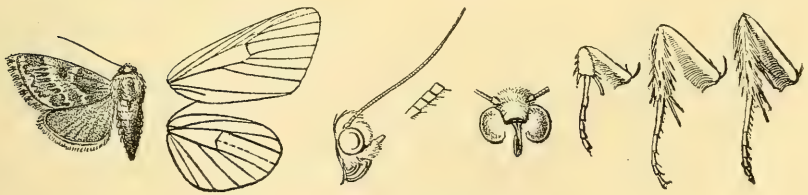


Fig. 26.—*Rhododipsa volupia*, ♂. ½.

Head and thorax orange-yellow; mid and hind tibiæ and tarsi tinged with pink; abdomen orange-yellow, the ventral surface pink. Fore

wing crimson ; a rather ill-defined and irregular curved antemedial ochreous line slightly angled inwards on vein 1 ; a similar postmedial line produced to short white streaks on the veins, strongly incurved in submedian fold, whence it anastomoses with the antemedial line ; an irregularly and minutely dentate subterminal line slightly angled outwards at vein 7 ; cilia orange, with a pinkish line through them. Hind wing crimson, with the cilia orange with a pinkish line through them. Underside irrorated with white, some orange on costa and inner margin of fore wing.

Ab. 1. Fore wing with the ante- and postmedial lines narrower and white, not anastomosing below the cell, the subterminal line obsolete.

Hab. U.S.A., Texas, Colorado, 2 ♀ type. *Exp.* 26–28 millim.

77. Rhodopipsa masoni. (Plate LV. fig. 30.)

Rhodopipsa masoni, Smith, Ent. News Philad. vii. p. 284 (1896).

♀. Head and thorax deep orange ; legs partly fuscous, the mid and hind tibiæ tinged with crimson ; abdomen fuscous brown, the anal tuft orange. Fore wing deep crimson, with ill-defined and diffused irregular brownish-ochreous ante- and postmedial and subterminal lines, the 1st somewhat curved, the 2nd incurved below vein 4 and conjoined to the antemedial line in submedian fold, the last angled outwards at vein 7 ; cilia brownish ochreous, with a crimson line through them. Hind wing fuscous brown with a slight crimson tinge ; cilia brownish ochreous, with some crimson and dark brown at base. Underside of fore wing dark brown, with some crimson on costal and terminal areas ; hind wing with the costal half pale crimson, a discoidal lunule, curved postmedial line, and traces of subterminal line.

Hab. U.S.A., Colorado, Denver, 1 ♀. *Exp.* 26 millim.

*78. Rhodopipsa aden.

Rhodopipsa aden, Streck. Lep. Rhop. & Het. Suppl. i. p. 11 (1898).

Head and thorax yellow ; abdomen fuscous black, with the anal tuft yellow. Fore wing white, the basal and subterminal areas and the medial shade purplish crimson mixed with greyish, especially in the two former ; discoidal spot obscured by the crimson shade ; antemedial line nearly straight ; cilia fuscous. Hind wing fuscous black, the cilia becoming yellowish towards tornus.

Hab. U.S.A., Colorado (*Doll*). *Exp.* 22 millim. This species is unknown to me.

Genus LYGRANTHŒCIA.

	Type.
Lygranthœcia, Grote & Rob. Trans. Am. Ent. Soc. iv. p. 432 (1870)	*marginata.*
Pippona, Harv. Bull. Buff. Soc. Nat. Sci. iii. p. 9 (1875)	*bimatris.*

Proboscis fully developed ; palpi oblique, extending to well beyond frons, the 2nd joint clothed with rough hair ; frons with rounded prominence with

curved corneous plate below it; antennæ of male ciliated. Fore tibiæ short and broad, with two long curved claws and two to four spines on inner side and three to five claws on outer diminishing in size towards base; mid and hind tibiæ strongly spined. Fore wing triangular; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked or from cell.

A. Fore wing silvery white without transverse lines ..... *bimatris.*
B. Fore wing not white and with transverse lines.
a. Hind wing with the basal area or medial band or spots ochreous to orange-yellow.
a^1. Hind wing with the yellow area not reduced to two spots.
a^2. Head, thorax, and fore wing strongly irrorated with white..... *ultima.*
b^2. Head, thorax, and fore wing not irrorated with white.
a^3. Fore wing with the ante- and postmedial lines prominently white.
a^4. Abdomen fuscous ..... *concinna.*
b^4. Abdomen clear yellow ..... *tanena.*
b^3. Fore wing with the ante- and postmedial lines indistinct.
a^4. Hind wing with the yellow extending to beyond discoidal spot.
a^5. Fore tibiæ with five claws on outer side. *mortua.*
b^5. Fore tibiæ with three claws on outer side. *errans.*
b^4. Hind wing with the yellow not extending to discoidal spot.
a^5. Hind wing with a yellow spot beyond the cell ..... *ar.*
b^5. Hind wing without yellow spot beyond the cell ..... *obscurata.*
b^1. Hind wing with the yellow area reduced to two medial spots.
a^2. Fore wing with the medial area suffused with purplish pink ..... *mesceana.*
b^2. Fore wing with the medial area not suffused with purplish pink.
a^3. Fore tibiæ with five claws on outer side ..... *bicuspida.*
b^3. Fore tibiæ with three claws on outer side.
a^4. Fore wing with the basal and subterminal areas not strongly irrorated with black, the lines grey ..... *tuberculum.*
b^4. Fore wing with the basal and subterminal areas strongly irrorated with black, the lines whitish..... *brevis.*
b. Hind wing wholly black.
a^1. Fore wing with the ground-colour black-brown... *septentrionalis.*
b^1. Fore wing with the ground-colour pale yellowish.
a^2. Fore wing with the basal area, medial shade, and postmedial band prominently rufous..... *siren.*
b^2. Fore wing with the rufous shades almost obsolete. *inclara.*
c. Hind wing whitish with dark terminal band.
a^1. Hind wing with the whitish area irrorated with fuscous.
a^2. Fore wing with the ante- and postmedial lines obsolete at middle and conjoined so as to enclose triangular patches on costa and inner margin ..... *constricta.*

b^2. Fore wing with the ante- and postmedial lines entire and separate.
a^3. Fore wing with the postmedial line crenulate.
a^4. Hind wing with black discoidal spot ..... *approximata.*
b^4. Hind wing without black discoidal spot.
a^5. Fore wing with the antemedial line angled below the cell ..... *thoreaui.*
b^5. Fore wing with the antemedial line evenly curved ..... *hanga.*
b^3. Fore wing with the postmedial line evenly bisinuate ..... *marginata.*
b^1. Hind wing with the whitish area not irrorated with fuscous.
a^2. Hind wing with large black discoidal spot.
a^3. Fore wing with the ante- and postmedial lines prominently white, the former retracted to base at median nervure ..... *intrabilis.*
b^3. Fore wing with the ante- and postmedial lines very indistinct ..... *nubila.*
b^2. Hind wing without discoidal spot.
a^3. Thorax and medial and terminal areas of fore wing irrorated with white ..... *imperspicua.*
b^3. Thorax and fore wing not irrorated with white.
a^4. Fore wing with the basal and postmedial areas blackish ..... *lora.*
b^4. Fore wing with the basal and postmedial areas pale brown ..... *bifascia.*

79. Lygranthœcia bimatris. (Plate LV. fig. 31.)

Pippona bimatris, Harv. Bull. Buff. Soc. Nat. Sci. iii. p. 10 (1875); Smith, Cat. Noct. N. Am. p. 266.

♂. Head yellowish white; palpi fuscous at tips; antennæ fulvous; thorax pure white; legs yellowish white, the tibiæ and tarsi tinged with fuscous; abdomen yellowish white. Fore wing silvery white. Hind wing white, with slight fuscous suffusion from base through the cell to apex. Underside of fore wing suffused with fuscous except the margins.

Fore tibiæ with two claws and one spine on inner side and three claws on outer.

Hab. U.S.A., Texas, 1 ♂ type. *Exp.* 34 millim.

80. Lygranthœcia ultima. (Plate LVI. fig. 10.)

Heliothis ultima, Streck. Lep. Rhop. & Het. p. 122 (1876); Smith, Cat. Noct. N. Am. p. 285.

♂. Head and thorax red-brown, the scales tipped with white; pectus and legs ochreous irrorated with red-brown; abdomen ochreous. Fore wing red-brown irrorated with grey, the medial area ochreous irrorated with red-brown; the lines white; the antemedial line waved, excurved at median nervure, then oblique; the postmedial line excurved from costa to vein 3, then incurved; traces of a sinuous subterminal line, with the area beyond it rather paler. Hind wing ochreous slightly tinged with brown and with a brown discoidal spot; the terminal area broadly brown. Underside pale;

fore wing with brown discoidal spot and postmedial line with patch beyond it below middle; hind wing with slight discoidal spot and curved postmedial line, with diffused patch towards tornus.

Fore tibiæ with two claws and two spines on inner side and three claws on outer.

Hab. U.S.A., Texas, 1 ♂, Grote Coll. *Exp.* 34 millim.

*81. **Lygranthœcia concinna.** (Plate LXIX. fig. 1.)

Schinia concinna, Smith, Trans. Am. Ent. Soc. xviii. p. 128 (1891); id. Cat. Noct. N. Am. p. 284.

Head and thorax dark ochreous with an olive tinge; abdomen fuscous. Fore wing ochreous tinged with olive, the markings chocolate-brown; basal area brown, deepest towards the antemedial line, which is white, prominent, excurved and sinuous to median nervure, then incurved and sinuous; reniform large, dark, somewhat ill-defined, obscured by the dusky medial shade; postmedial line white, excurved from costa to vein 4, then incurved, obsolescent and reduced to points beyond the cell; postmedial area dark, paler towards the subterminal line, which is only defined by the area beyond it being ochreous; cilia ochreous, with a terminal series of dark points. Hind wing obscure fulvous towards the base, becoming blackish towards termen; cilia dirty ochreous white. Underside ochreous; fore wing with the disk black, conjoined to a subapical spot; a black discoidal spot; hind wing with large discoidal black spot and a terminal band.

Fore tibiæ with two claws on inner side and three on outer.

Hab. U.S.A., S. Texas. *Exp.* 24 millim. This species is unknown to me, figured from a drawing from type in Brooklyn Inst. Arts & Sci.

*82. **Lygranthœcia? tanena.**

Schinia tanena, Streck. Lep. Rhop. & Het. Suppl. i. p. 10 (1898).

Head and thorax olive-yellow; abdomen clear yellow. Fore wing with the basal area yellow-brown; antemedial line whitish, produced outwards to a point on median nervure; medial area ochreous shaded with brown; a dark quadrate reniform stigma extending to costa; postmedial line whitish, the area beyond it yellow-brown; the terminal area ochreous. Hind wing black, with the basal area yellow.

Hab. U.S.A., Texas, Bastrop (*Heiligbrodt*). *Exp.* 16 millim. This species is unknown to me.

83. **Lygranthœcia mortua.** (Plate LV. fig. 32.)

Anthœcia mortua, Grote, Proc. Ent. Soc. Phil. iii. p. 528, pl. vi. f. 1 (1864); Smith, Cat. Noct. N. Am. p. 282.
Anthœcia packardii, Grote, Proc. Ent. Soc. Phil. iii. p. 528, pl. vi. f. 2 (1864).
Anthœcia nobilis, Grote, Proc. Ent. Soc. Phil. iii. p. 529, pl. vi. f. 3.
Anthœcia labe, Streck. Lep. Rhop. & Het. Suppl. i. p. 10 (1898).

♂. Head and thorax yellow-brown tinged with red-brown;

pectus and legs orange-yellow, the tibiæ tinged with pink; abdomen orange-yellow, dorsally tinged with rufous, ventrally with pink. Fore wing pale greyish brown suffused with rufous; the basal area rather darker rufous, bounded by the sinuous whitish antemedial line, which is strongly excurved at median nervure; reniform indistinct, dusky; the pale postmedial line excurved from costa to vein 5, then strongly incurved, and with a rufous band between it and the subterminal line represented by a series of dark points slightly angled outwards at vein 7 and excurved at middle; a terminal series of dark points usually present. Hind wing orange, with a blackish discoidal spot and broad terminal band with more or less developed orange spot on it at middle. Underside of both wings with some red irroration on costal area.

♀ much darker; abdomen suffused with fuscous above; fore wing with the basal and postmedial areas dark rufous; hind wing with the basal area to end of cell black with irregular outer edge.

Ab. 1. *labe*. Fore wing with the markings almost obsolete.

Fore tibiæ with two claws and two to four spines on inner side and five claws on outer.

Hab. U.S.A., Texas, Dallas (*Boll*), 1 ♂, 1 ♀, Colorado, Larima Co. (*Smith*), 2 ♂, Arizona. *Exp.* 28–32 millim.

*84. Lygranthœcia errans. (Plate LIX. fig. 7.)

Schinia errans, Smith, Trans. Am. Ent. Soc. x. p. 235 (1883); id. Cat. Noct. N. Am. p. 284.

Head, thorax, and abdomen ochreous. Fore wing ochreous with olive-brown markings; the basal area brown, its outer edge excurved below cell; a medial brown shade expanding towards costa, narrowing to a line at inner margin; reniform defined by brown; the postmedial line pale, excurved from costa to vein 4, then strongly incurved; the terminal area brown, with the subterminal line pale, sinuous, the area beyond it rather paler. Hind wing yellow, with dark discoidal spot and broad terminal band.

Fore tibiæ with two claws and three spines on inner side and three claws on outer.

Hab. U.S.A., Arizona. *Exp.* 24 millim. This species is unknown to me; figured from Prof. Smith's figure.

*85. Lygranthœcia? ar.

Schinia ar, Streck. Lep. Rhop. & Het. Suppl. i. p. 10 (1898).

Head, thorax, and abdomen dull ochreous. Fore wing dull ochreous; the basal area brown except towards costa; subterminal and terminal areas brown; the antemedial line indistinct, white, excurved and somewhat trisinuate; reniform indistinct, brown; postmedial line indistinct, white, slightly crenulate, excurved from costa to vein 4, then incurved; subterminal line white, dentate, angled inwards at vein 5; cilia chequered brown and white. Hind wing fuscous, the base and basal half of costal area ochreous,

a small ochreous spot beyond discoidal spot; cilia fuscous, white at tips.

Hab. U.S.A., Texas, Dallas (*Boll*). *Exp.* 20 millim. This species is unknown to me.

*86. Lygranthœcia? obscurata.

Schinia obscurata, Streck. Lep. Rhop. & Het. Suppl. i. p. 10 (1898).

Head and thorax olive-brown; abdomen dorsally blackish. Fore wing with the basal area olive-brown, produced outwards to a point on median nervure; medial area clear pale ochreous; reniform olive-brown, large, quadrate, extending to costa, on which is a fascia connecting it with basal area; postmedial area olive-brown; terminal area pale clear ochreous; a fine dark terminal line. Hind wing black, with the base yellow; cilia black, white at tips.

Hab. U.S.A., Pennsylvania, Latrobe (*Schmidt*). *Exp.* 22 millim. This species is unknown to me.

87. Lygranthœcia mesceana. (Plate LVI. fig. 9.)

Lygranthœcia mesceana, Grote, Can. Ent. vii. p. 224 (1875); Druce, Biol. Centr.-Am., Het. i. p. 300; Smith, Cat. Noct. N. Am. p. 284.
Heliothis fastidiosa, Streck. Lep. Rhop. & Het. p. 121 (1876).
Lygranthœcia rufimedia, Grote, Bull. Brookl. Ent. Soc. iii. p. 31 (1883).

♂. Head and thorax pale olive-yellow; palpi, pectus, and legs yellow, the extremity of palpi and tibiæ tinged with pink; tarsi banded with brown; abdomen ochreous. Fore wing with the basal area olive-brown tinged with pink to the antemedial line, which is white and bent outwards at median nervure, then oblique; the medial area ochreous suffused with pink and with an indistinct dark discoidal patch; the postmedial line with white points on it, bent outwards below costa, excurved to vein 3, then incurved and with an olive-brown band beyond it with sinuous outer edge; the terminal area and cilia pale olive. Hind wing black; the costal area pale ochreous to beyond middle, a spot beyond discocellulars and another below end of cell and some diffused ochreous before medial part of termen; cilia ochreous and brown at base, white at tips. Underside with the costal area of both wings tinged with pink; some black in and below cell near base; a discoidal spot on fore wing conjoined to the postmedial band, which on hind wing extends to termen at tornus and on inner area to the subbasal patch.

Fore tibiæ with two claws and one spine on inner side and four claws on outer.

Ab. 1. *rufimedia*. Abdomen dorsally banded with fuscous; fore wing with the postmedial band darker and diffused to middle of termen; hind wing with the ochreous spots reduced and with hardly a trace of ochreous before termen.

Fore tibiæ with two claws and two spines on inner side and three claws on outer.

Hab. U.S.A., Texas, Bastrop Co., 1 ♂ type, Florida, 1 ♂ type

rufimedia, New Mexico, Roswell (*Cockerell*), 1 ♂ ; Mexico, Jalapa (*Hoege*), 1 ♂ , Godman-Salvin Coll. *Exp.* 24–26 millim.

*88. Lygranthœcia bicuspida. (Plate LXIX. fig. 2.)

Schinia bicuspida, Smith, Trans. Am. Ent. Soc. xviii. p. 127 (1891) ; id. Cat. Noct. N. Am. p. 282.

Head and thorax ochreous ; abdomen fuscous. Fore wing ochreous ; the basal area dark ; the subbasal line pale, angled outwards below costa ; vein 1 pale ; the inner area irrorated with black ; antemedial line pale, sharply angled outwards on median nervure, incurved below vein 1 ; reniform indistinct, dark ; a dusky medial shade expanding towards inner margin ; postmedial line excurved from costa to vein 4, then incurved ; subterminal area strongly irrorated with black, especially towards termen, defining the pale subterminal line, which is strongly incurved at discal and submedian folds, angled outwards at middle ; a terminal series of black points ; cilia intersected with black. Hind wing black, with a broad yellow medial band bisected by the large black discoidal spot ; cilia yellow. Underside of fore wing pale yellow with a basal dark shade, a large discoidal spot and broad subterminal band ; hind wing white, with black discoidal lunule and incomplete terminal band.

Fore tibiæ with two claws on inner side and five on outer.

Hab. U.S.A., Texas. *Exp.* 24 millim. This species is unknown to me, figured from a drawing from type in Brooklyn Inst. Arts & Sci.

89. Lygranthœcia tuberculum. (Plate LVI. fig. 5.)

Melicleptria tuberculum, Hübn. Zutr. iii. p. 29, ff. 517, 518 (1827) ; Smith, Cat. Noct. N. Am. p. 283.
Anthœcia dorsilutea, Wlk. xi. 695 (1857).

♂ . Head and thorax orange-fulvous, the latter with fuscous scales mixed ; abdomen orange-fulvous, dorsally banded with black-brown. Fore wing pale rufous ; pale subbasal and antemedial lines with dentitions in the cell meeting each other, the subbasal line not reaching inner margin, the antemedial oblique and sinuous below the cell and with some black scales on its inner edge ; the pale postmedial line bent outwards below costa, excurved to vein 4, then incurved and with some black irroration beyond it ; the pale subterminal line excurved at middle. Hind wing with the basal half orange, with some black suffusion below base of cell and a black discoidal spot conjoined at extremities to the black-brown terminal half of wing ; cilia yellowish, white at tips. Underside of fore wing orange-yellow, with some black in and below cell before middle and a discoidal spot conjoined to the postmedial band, which is very wide except towards costa ; hind wing with black discoidal spot conjoined to the large patch on tornal area.

Fore tibiæ with two claws and two spines on inner side and three claws on outer.

Hab. U.S.A., 3 ♂ type *dorsilutea*, Pennsylvania, Georgia, Florida. *Exp.* 26 millim.

90. Lygranthœcia brevis. (Plate LVI. fig. 6.)

Anthœcia brevis, Grote, Proc. Ent. Soc. Phil. iii. p. 530, pl. vi. f. 4 (1864); Smith, Cat. Noct. N. Am. p. 283.

Anthœcia brevis, var. *atrites*, Grote, Proc. Ent. Soc. Phil. iii. p. 530, pl. vi. f. 5 (1864); id. Bull. Buff. Soc. Nat. Sci. i. p. 119 (1873).

♂. Head and thorax orange-fulvous mixed with whitish; abdomen pale orange, the dorsum black except the 1st and last three segments. Fore wing ochreous whitish, largely suffused with red-brown and black; the basal area rufous, bounded by the pale antemedial line, which is angled inwards in cell and on vein 1; a diffused brown discoidal spot; the pale postmedial line excurved from costa to vein 3, then incurved and with a rufous band beyond it with its outer edge angled outwards at vein 6 and excurved below middle; some blackish points on termen; cilia chequered with brown. Hind wing black-brown, with yellowish spots beyond the discocellulars and below end of cell; cilia yellowish white. Underside of fore wing yellowish, with black streaks in and below cell and discoidal spot conjoined to the postmedial band; hind wing with some black below base of cell conjoined to the discoidal spot and the postmedial band.

♀. Hind wing without the yellow spots.

Fore tibiæ with two claws and one spine on inner side and three claws on outer.

Hab. U.S.A., New York, Massachusetts, Illinois, Iowa, Colorado, 1 ♂, (*Cockerell*) 1 ♀, New Mexico. *Exp.* 26 millim.

91. Lygranthœcia septentrionalis. (Plate LVI. fig. 7.)

Omia septentrionalis, Wlk. xv. 1744 (1858); Smith, Cat. Noct. N. Am. p. 284.

♀. Head and thorax yellowish mixed with brown; abdomen black-brown, the extremity tinged with yellowish. Fore wing black-brown, suffused in part with ochreous and rufous; the antemedial line pale, excurved at median nervure and angled inwards at vein 1; an ochreous spot in middle of cell sometimes conjoined to one below the cell; an obscure dark discoidal spot; the postmedial line pale, excurved from costa to vein 5, then incurved; an obscure ochreous apical spot and indistinct subterminal line angled inwards in discal fold, then excurved. Hind wing black-brown. Underside of fore wing with whitish spot in end of cell conjoined to a spot below it and a spot beyond end of cell.

Fore tibiæ with two claws and one spine on inner side and three claws on outer.

Hab. U.S.A., Illinois (*Doubleday*), 2 ♀ type. *Exp.* 28 millim.

*92. Lygranthœcia siren.

Heliothis siren, Streck. Lep. Rhop. & Het. p. 122 (1876); Smith, Cat. Noct. N. Am. p. 285.

Head and thorax reddish yellow; abdomen black above, yellowish below. Fore wing greyish yellow; the basal area rufous, with the

diffused black antemedial line on its outer edge; a slight medial rufous shade; the black discoidal spot rather small; a postmedial rufous band defined by the blackish postmedial and subterminal lines, the latter angled inwards to near former at discal fold. Hind wing black, with the cilia white. Underside of fore wing black, the costal edge yellowish white, the termen white; hind wing black, with apical white patch extending on costa to before middle.

Hab. U.S.A., Texas (*Boll*). *Exp.* 24 millim. This species is unknown to me.

93. **Lygranthœcia inclara.** (Plate LVI. fig. 8.)

Heliothis inclara, Streck. Lep. Rhop. & Het. p. 122 (1876); Smith, Cat. Noct. N. Am. p. 284.

♀. Head and thorax olive-yellow mixed with whitish; abdomen pale fulvous-yellow, the dorsum black except the 1st and terminal segments. Fore wing pale olive-yellow; the lines pale and very indistinct; the antemedial line excurved at median nervure, then oblique; a blackish discoidal point; the postmedial line excurved from costa to vein 3, then incurved and with some dark scales on its outer edge; the obscure subterminal line dark, angled outwards at vein 6 and excurved at middle. Hind wing black-brown. Underside black; fore wing with the margins whitish, expanding into a patch on inner margin beyond middle; hind wing with the costal and a large apical area narrowing to a point at vein 2 whitish.

Fore tibiæ with two claws and two spines on inner side and four claws on outer.

Hab. U.S.A., Texas, 1 ♀, Grote Coll., Arizona, Phœnix, 1 ♀. *Exp.* 28 millim.

*94. **Lygranthœcia constricta.** (Plate LIX. fig. 6.)

Lygranthœcia constricta, H. Edw. Papilio. ii. p. 128 (1882); Smith, Trans. Am. Ent. Soc. x. pl. viii. f. 42; id. Cat. Noct. N. Am. p. 283.

Fore wing dark brown; the medial area slightly paler, defined by pale ante- and postmedial lines, which are interrupted at middle and confluent with each other so that the medial area is divided into two triangular patches; terminal area broadly brownish grey; a pale subterminal line. Hind wing dusky, with ill-defined paler medial band and dark discoidal spot. Underside dusky, with slightly paler areas and dark discoidal spot.

Fore tibiæ with two claws and one spine on inner side and three claws on outer.

Hab. U.S.A., N. Carolina. *Exp.* 28 millim. This species is unknown to me; figured from Prof. Smith's figure.

*95. **Lygranthœcia? approximata.**

Schinia approximata, Streck. Lep. Rhop. & Het. Suppl. i. p. 10 (1898).

Dull ochreous. Fore wing with the basal area fuscous, darkest towards margins and antemedial line, which is prominent, white,

crenulate; medial area ochreous with a dark brown medial shade; reniform dark, quadrate; postmedial line prominent, white, crenulate; postmedial area dark fuscous; an irregularly dentate subterminal line; terminal area pale ochreous, in one specimen suffused with fuscous; a terminal series of black points, rarely absent; cilia yellowish white intersected with fuscous. Hind wing dull ochreous white tinged with black; the basal area black; a large black discoidal spot conjoined to the broad terminal black band; cilia fuscous, white at tips.

Hab. U.S.A., Texas, Dallas (*Boll*). *Exp.* 18 millim. This species is unknown to me.

96 **Lygranthœcia thoreaui.** (Plate LVI. fig. 1.)

Anthœcia thoreaui, Grote & Rob. Trans. Am. Ent. Soc. iii. p. 181, pl. ii. f. 80 (1870); Smith, Cat. Noct. N. Am. p. 282.

Head and thorax dull brown, the scales tipped with grey; abdomen pale grey-brown. Fore wing dull brown irrorated with grey; the antemedial line whitish, somewhat oblique from costa to submedian fold, then very oblique inwardly to inner margin; the medial area greyer, with diffused brown discoidal patch; the postmedial line white, crenulate, excurved from costa to vein 3, then incurved; a terminal grey band. Hind wing grey-brown with the terminal area darker.

Fore tibiæ with two claws and one spine on inner side and four claws on outer.

Hab. U.S.A., New York, 1 ♂, 1 ♀, Grote Coll., Texas, Alabama, Kansas, Indiana. *Exp.* 34 millim.

*97. **Lygranthœcia? hanga.**

Schinia hanga, Streck. Lep. Rhop. & Het. Suppl. i. p. 9 (1898).

Head, thorax, and abdomen dull greyish brown. Fore wing dull greyish brown, the medial area more ochreous; terminal area rather paler; antemedial line white, slightly crenulate, evenly curved; reniform represented by an obscure shade; postmedial line white, slightly crenulate, excurved from costa to vein 4, then moderately incurved; cilia chequered yellowish white and brown. Hind wing dirty white, with a broad fuscous terminal band with pale subterminal line on it from vein 5 to tornus; cilia fuscous, white at tips.

Hab. U.S.A., Texas, Dallas (*Boll*). *Exp.* 28 millim. This species is unknown to me.

98. **Lygranthœcia marginata.** (Plate LVI. fig. 2.)

Cambrus marginata, Haw. Lep. Brit. p. 374 (1810); Wood, Ind. Ent. pl. 54. f. 68; Smith, Cat. Noct. N. Am. p. 282.
Anthœcia rivulosa, Guen. Noct. ii. p. 184, pl. ix. f. 12 (1852).
Microphysa contracta, Wlk. xii. 836 (1857).
Euclidia designata, Wlk. xxxiii. 985 (1865).

Head and thorax dark brown, the scales tipped with grey;

abdomen grey irrorated with brown. Fore wing dark brown irrorated with grey; the antemedial line white, strongly excurved at middle and very oblique towards inner margin; the medial area much greyer, with a diffused dark discoidal spot; the postmedial line white, slightly bent outwards below costa, erect to vein 5, then strongly incurved; a very slightly curved whitish subterminal line,

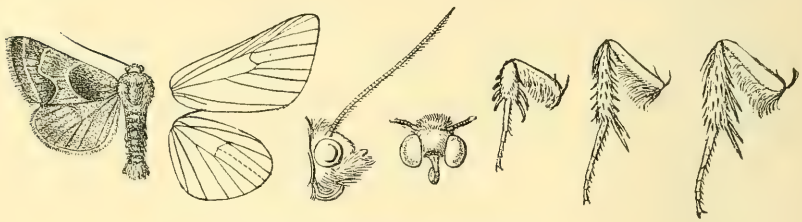


Fig. 27.—*Lygranthœcia marginata*, ♂. ½.

with the area beyond it rather greyer. Hind wing grey-brown, with an obscure discoidal spot; a pale ochreous postmedial line, the area beyond it rather darker; cilia white at tips.

Fore tibiæ with two claws and one spine on inner side and three or four claws on outer.

Hab. U.S.A., Middle, Southern, and Central States, New York, 8 ♂ type *contracta*, 2 ♀ type *designata*, Massachusetts, Nantucket, 1 ♂, Alabama, 1 ♀. *Exp.* 30–34 millim.

*99. Lygranthœcia intrabilis. (Plate LVIII. fig. 32.)

Schinia intrabilis, Smith, Insect Life, v. p. 331, f. 3 (1893).

♀. Head and thorax white tinged with pale olive; pectus, legs, and abdomen white. Fore wing grey-white; a white streak on median nervure to origin of vein 2, then curved to submedian fold, then oblique to inner margin, the included space being tinged with olive; medial area suffused with ochreous, with the black discoidal spot of underside showing through; the postmedial line white, slightly defined by brown on outer side, oblique from costa to vein 2, then bent outwards to tornus, the area beyond it tinged with olive; a slight whitish subterminal line. Hind wing white, with large black discoidal lunule and some suffusion between it and inner margin; terminal area suffused with black and with whitish patch on termen. Underside white; fore wing with fuscous streak below cell before middle, a large black discoidal spot, and postmedial band not reaching costa or inner margin; hind wing with discoidal lunule and subterminal band towards tornus.

Fore tibiæ with two claws on inner side and four on outer.

Hab. U.S.A., California, Argus Mts., San Diego, in U.S. Nat. Mus. *Exp.* 28 millim.

*100. Lygranthœcia? nubila.

Heliothis nubila, Streck. Lep. Rhop. & Het. p. 122 (1876); Smith, Cat. Noct. N. Am. p. 285.

Head, thorax, and abdomen grey tinged with olive-green, whitish below. Fore wing grey tinged with olive-green; the antemedial and postmedial lines very indistinct, especially the former; the submarginal area rather darker than the rest of wing. Hind wing yellowish white; some black scales at base; a large black discoidal spot; a broad terminal black band with its inner edge straight; cilia white. Underside yellowish white; fore wing with elongate black basal patch not extending to costa or inner margin, a round black discoidal spot, a subterminal black band not extending to costa or inner margin, with some rufous between it and costa; hind wing with indistinct discoidal spot and a subterminal band, rufous towards costa, black towards inner margin.

Hab. U.S.A., Texas (*Boll*). *Exp.* 24 millim. This species is unknown to me.

101. Lygranthœcia imperspicua. (Plate LVI. fig. 4.)

Heliothis imperspicua, Streck. Lep. Rhop. & Het. p. 122 (1876).
Schinia digitalis, Smith, Trans. Am. Ent. Soc. xviii. p. 128 (1891); id. Cat. Noct. N. Am. p. 283.

♂. Head and thorax ochreous mixed with brown, the scales of thorax tipped with grey; abdomen ochreous. Fore wing ochreous, tinged with brown and irrorated with grey; the basal area suffused with dark brown to the obliquely curved antemedial line; a diffused dark discoidal spot; the postmedial line excurved from costa to vein 3, then incurved and bent outwards to inner margin, defined by a dark band on its outer side, the outer edge of which represents the nearly straight subterminal line. Hind wing ochreous white irrorated with dark brown.

Fore tibiæ with two claws and one spine on inner side and four claws on outer.

Hab. U.S.A., Iowa city, 1 ♂, Texas, Dallas. *Exp.* 30 millim.

*102. Lygranthœcia? lora.

Schinia lora, Streck. Lep. Rhop. & Het. Suppl. i. p. 10 (1898).

Head yellowish white; thorax dull ochreous with an olive tinge; abdomen yellowish white. Fore wing with the basal area fuscous; the medial area pale ochreous, the ante- and postmedial lines indistinct, the orbicular and reniform quite obsolete; postmedial area fuscous to nearly black; terminal area pale ochreous; cilia fuscous mixed with pale ochreous. Hind wing yellowish white, with a black terminal band; cilia white.

Hab. U.S.A., Texas, Dallas (*Boll*), Bastrop. *Exp.* 22 millim. This species is unknown to me.

103. **Lygranthœcia bifascia.** (Plate LVI. fig. 3.)

Schinia bifascia, Hübn. Zutr. i. p. 14, ff. 55, 56 (1827); Smith, Cat. Noct. N. Am. p. 276.
Anthophila divergens, Wlk. xii. 830 (1857).

♀. Head and thorax whitish tinged with pale olive-brown; (abdomen wanting). Fore wing ochreous whitish, irrorated and suffused with pale olive-brown; an antemedial whitish line obtusely angled outwards below costa, then very oblique; a postmedial slightly sinuous whitish line, slightly bent outwards below costa, oblique to vein 2, then bent outwards to inner margin. Hind wing ochreous whitish, irrorated with olive-brown, especially on terminal area.

Fore tibiæ with two claws and one spine on inner side and four claws on outer.

Hab. U.S.A., Georgia, 1 ♀ type *divergens*, Colorado, Arizona. *Exp.* 30 millim.

Genus **SCHINIA.**

	Type.
Schinia, Hübn. Verz. p. 281 (1827)	*gracilenta.*
Tamila, Guen. Noct. ii. p. 176 (1852)	*nudina.*
Euleucyptera, Grote, Proc. Ent. Soc. Phil. iv. p. 329 (1865)	*cumatilis.*
Tricopis, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 75 (1874)	*chrysellus.*
Porrima, Grote, Bull. Geol. Surv. iii. p. 798 (1877)	*sanguinea.*
Bessula, Grote, Papilio, i. p. 176 (1881)	*luxa.*
Trileuca, Grote, Trans. Am. Ent. Soc. x. p. 265 (1883)	*trifascia.*

Proboscis fully developed; palpi fringed with hair below, porrect to just beyond the large rounded frontal prominence, with curved corneous plate below it; eyes smooth, rounded; antennæ of male ciliated; head and thorax clothed with hair and scales; fore tibiæ short and broad, with a long curved claw and two spines on inner side and four or five claws on outer, diminishing in length towards base of tibia; mid and hind tibiæ strongly spined. Fore wing with the apex slightly produced and the termen obliquely curved; vein 3 from before angle of cell; 5 from above angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole, 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

A. Fore wing yellowish white with the markings reduced to points ..... *luxa.*
B. Fore wing with the markings not reduced to points.
  a. Fore wing with the ground-colour silvery white.
    a^1. Fore wing without medial band.
      a^2. Fore wing without antemedial band ..... *oculata.*
      b^2. Fore wing with antemedial band from cell to inner margin ..... *reniformis.*
    b^1. Fore wing with complete antemedial band.
      a^3. Hind wing with discoidal spot ..... *cumatilis.*
      b^3. Hind wing without discoidal spot.
        a^4. Fore wing with the white medial area broad ... *hulstia.*
        b^4. Fore wing with the white medial area narrow . *tenuescens.*

b^1. Fore wing with medial band.
a^2. Fore wing without rufous terminal band ..... *ciliata.*
b^2. Fore wing with rufous-tinged terminal band.
a^3. Fore wing with the rufous not extending to inner side of subterminal line ..... *chrysella.*
b^3. Fore wing with the rufous extending to inner side of subterminal line ..... *aleucis.*
b. Fore wing with the ground-colour not silvery white.
a^1. Hind wing with the ground-colour white to ochreous or pale brown.
a^2. Fore wing with white fascia in cell ..... *lucilinea.*
b^2. Fore wing without white fascia in cell.
a^3. Fore wing with the markings almost obsolete.
a^4. Fore wing with the ground-colour pale ochreous. *neglecta.*
b^4. Fore wing with the ground-colour reddish grey . *diffusa.*
b^3. Fore wing with the markings well-developed.
a^4. Fore wing with the subterminal line oblique, straight.
a^5. Fore wing with the postmedial line oblique, straight ..... *trifascia.*
a^6. Fore wing with the antemedial line angled outwards in cell..... *oleagina.*
b^6. Fore wing with the antemedial line excurved in cell..... *gracilenta.*
b^4. Fore wing with the subterminal line irregular.
a^5. Fore wing with the ground-colour not fulvous-red.
a^6. Fore wing without purplish pink on basal and postmedial areas.
a^7. Fore wing with the postmedial ine not dentate or crenulate.
a^8. Hind wing without discoidal spot ... *sexplagiata.*
b^8. Hind wing with discoidal spot.
a^9. Fore wing with the lines evenly curved..... *biundulata.*
b^9. Fore wing with the antemedial line strongly excurved at middle, the postmedial line beyond the cell ... *separa.*
b^7. Fore wing with the postmedial line more or less dentate or crenulate.
a^8. Fore wing with the markings tinged with olive.
a^9. Fore wing with the antemedial line very strongly angled outwards below the cell..... *acutiline.*
b^9. Fore wing with the antemedial line moderately angled or excurved below the cell.
a^{10}. Fore wing without black point in middle of cell.
a^{11}. Hind wing pale fuscous with medial whitish band ..... *parmeliana.*
b^{11}. Hind wing white with subterminal olive band..... *obliqua.*
b^{10}. Fore wing with black point in middle of cell ..... *nundina.*
b^8. Fore wing with the markings dull brown not tinged with olive.
a^9. Fore wing without dark marks before the antemedial and beyond the postmedial lines..... *coercita.*

b^9. Fore wing with dark marks before the antemedial and beyond the postmedial lines.
a^{10}. Fore wing with the subterminal line hardly defined by brown on outer side.
a^{11}. Fore wing with the postmedial line excurved beyond the cell. *balba.*
b^{11}. Fore wing with the postmedial line angled outwards at vein 6 ..... *scutata.*
b^{10}. Fore wing with the subterminal line distinctly defined by brown on outer side.
a^{11}. Hind wing reddish buff ..... *arefacta.*
b^{11}. Hind wing white.
a^{12}. Fore wing with the medial area pale grey-brown.
a^{13}. Fore wing with the antemedial line evenly curved. *dolosa.*
b^{13}. Fore wing with the antemedial line waved ..... *cupes.*
b^{12}. Fore wing with the medial area white ..... *tertia.*
c^8. Fore wing with the markings of terminal area more or less rufous.
a^9. Thorax red-brown irrorated with white and black scales ..... *albafascia.*
b^9. Thorax white or tinged with ochreous.
a^{10}. Hind wing with distinct discoidal lunule.
a^{11}. Fore wing with the ground-colour ochreous white..... *brucei.*
b^{11}. Fore wing with the ground-colour pure white ..... *unimacula.*
b^{10}. Hind wing without discoidal lunule.
a^{11}. Fore wing with the antemedial line angled outwards on median nervure ..... *valsinghami.*
b^{11}. Fore wing with the antemedial line regularly curved ..... *lanul.*
b^6. Fore wing with the basal and postmedial areas purplish pink.
a^7. Hind wing white, the terminal area tinged with brown..... *regia.*
b^7. Hind wing wholly brownish.
a^8. Hind wing with the cilia white intersected with brown..... *gloriosa.*
b^8. Hind wing with the cilia brown tipped with whitish ..... *sanguinea.*
b^5. Fore wing fulvous-red irrorated with white... *saturata.*
b^1. Hind wing pink, with black terminal band..... *roseitincta.*
c^1. Hind wing yellow, with dark terminal band.
a^2. Hind wing with large discoidal spot.
a^3 Fore wing with the postmedial line slightly incurved below vein 4 ..... *lynx.*
b^3. Fore wing with the postmedial line strongly incurved at submedian fold..... *jaguarina.*
b^2. Hind wing with slight discoidal point.. ..... *petulans.*
c^2. Hind wing without discoidal spot ..... *arcigera.*

d^1. Hind wing black-brown.
a^2. Hind wing with yellow patch on disk nearly bisected by the discoidal spot ..... *sordida.*
b^2. Hind wing uniform black-brown ..... *limbalis.*

104. Schinia luxa. (Plate LVI. fig. 11.)

Bessula luxa, Grote, Pap. i. p. 176 (1881); Smith, Cat. Noct. N. Am. p. 266.

♀. Head and thorax pale straw-yellow; abdomen yellowish white. Fore wing pale straw-yellow; an antemedial brown point below the cell; a point in middle of cell and discoidal lunule; a waved postmedial line angled outwards at veins 6 and 4 and inwards in discal and submedian folds, where there are brown points; a sinuous subterminal series of brown points and a terminal series of brown striæ. Hind wing white, the inner area and termen slightly tinged with yellow.

Fore tibiæ with one claw and one spine on inner side and three claws on outer.

Hab. U.S.A., Colorado, New Mexico (*Snow*), 1 ♀ type. *Exp.* 32 millim.

*105. Schinia oculata. (Plate LIX. fig. 9.)

Schinia oculata, Smith, P. U.S. Nat. Mus. xxii. p. 488 (1900).

Head and tegulæ yellowish, the latter irrorated with brown; thorax white with yellow markings; abdomen yellowish white. Fore wing with the basal area creamy white, mottled with ochreous; medial area silvery white; reniform ochreous defined by black scales, the costa above it creamy white; terminal area creamy white, with a slight subterminal line on it angled outwards at vein 7 and excurved at middle; an apical brownish patch and a terminal series of dark points. Hind wing yellowish white, with a broad diffused fuscous terminal band. Underside of fore wing with the disk blackish, the inner and costal margins yellowish, a yellowish subterminal line and blackish discoidal spot.

Hab. U.S.A., Arizona, Phœnix, Rio Verde Mts. *Exp.* 28 millim. This species is unknown so me; figured from a photograph from type.

*106. Schinia reniformis. (Plate LVII. fig. 6.)

Schinia reniformis, Smith, P. U.S. Nat. Mus. xxii. p. 487 (1900).

♂. Silvery white. Fore wing with obliquely curved olive-fuscous antemedial line from cell to inner margin; reniform olive-fuscous, constricted at middle; a postmedial band expanding widely at costa, excurved to vein 4, then incurved; a terminal band narrowing to a point above tornus; the olive markings suffused with white scales. Hind wing with traces of fuscous subterminal band, an apical patch and terminal line. Underside of fore wing with diffused fuscous fascia below costa; the reniform, postmedial, and terminal bands more prominent.

Fore tibiæ with one claw and two spines on inner side and three claws on outer.

Hab. U.S.A., Colorado, Denver, in Coll. J. B. Smith. *Exp.* 26 millim.

107. Schinia cumatilis.

Euleucyptera cumatilis, Grote, Proc. Ent. Soc. Phil. iv. p. 330, pl. ii. f. 6 (1865); Smith, Cat. Noct. N. Am. p. 275.
Heliothis sulmula, Streck. Rep. Chief. Eng. 1878–79, p. 1862, pl. ii. f. 5 (1879).

♀. Head, thorax, and abdomen pure white. Fore wing silvery white; the antemedial line waved, obtusely angled on median nervure, oblique towards costa and inner margin and with an olive-grey band on its inner side; the discoidal spot of underside faintly indicated above; the postmedial line waved, excurved from costa to vein 4, bent inwards to below angle of cell and slightly outwards to inner margin, the area beyond it olive-grey, with a waved white

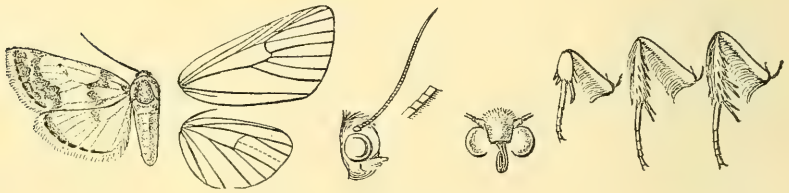


Fig. 28.—*Schinia cumatilis*, ♂. ½.

subterminal line expanding somewhat towards costa; termen tinged with white; cilia white, olive at apex. Hind wing pure white, with grey discoidal spot and narrow maculate terminal band ending in a point at tornus. Underside of fore wing with diffused grey streak on costal area and spots at middle and end of cell.

Fore tibiæ with one claw and two spines on inner side and two claws on outer.

Hab. U.S.A., Colorado, 1 ♀ Grote Coll., Denver (*Oslar*), 1 ♀, New Mexico. *Exp.* 34 millim.

108. Schinia hulstia. (Plate LVII. fig. 7.)

Schinia hulstia, Tepper, Trans. Am. Ent. Soc. x. p. 228 (1883); Smith, Cat. Noct. N. Am. p. 274.

♀. Head, thorax, and abdomen pure white; fore legs tinged with olive above. Fore wing silvery white; the antemedial line with olive-grey band on its inner edge, bent outwards at costa and on median nervure, then sinuous to inner margin; the postmedial line waved, slightly incurved in discal fold, and below vein 4 incurved to below end of cell, the area beyond it olive-grey with a minutely waved white subterminal line expanding towards apex and slightly excurved below middle; cilia white, with a greyish line through them. Hind wing white, with diffused fuscous subterminal

and terminal bands obsolescent towards tornus. Underside of fore wing with the costal area suffused with fuscous, a discoidal spot; hind wing with slight discoidal spot.

Fore tibiæ with one claw and two spines on inner side and two claws on outer.

Hab. U.S.A., Texas 1 ♀, Colorado. *Exp.* 34 millim.

*109. Schinia tenuescens. (Plate LXIX. fig. 3.)

Lygranthœcia tenuescens, Grote, Can. Ent. xv. p. 128 (1883); Smith, Cat. Noct. N. Am. p. 275.

Head, thorax, and abdomen silvery white. Fore wing with the basal area pale olive, bounded by the antemedial dark line, which is strongly excurved below cell; the medial area silvery white, very narrow and bounded by the irregularly waved postmedial dark line, which is excurved between veins 4 and 2, then incurved; terminal area pale olive, with the waved white subterminal line on it. Hind wing white, the termen shaded with olive.

Fore tibiæ with one claw and two spines on inner side and two claws on outer.

Hab. U.S.A., Arizona. *Exp.* 22 millim. This species is unknown to me, figured from a drawing from type in Brooklyn Inst. Arts & Sci.

110. Schinia ciliata. (Plate LIX. fig. 10.)

Schinia ciliata, Smith, P. U.S. Nat. Mus. xxii. p. 488 (1900).

♀. Head yellow in front, the vertex and thorax clothed with creamy-white and rufous scales; abdomen white. Fore wing with the basal area ochreous mixed with rufous, then silvery white to the subterminal line, the terminal area creamy white; a rather broad ochreous and rufous medial band with irregularly waved edges, oblique from costa to lower angle of cell, where it is angled and almost conjoined to the brown reniform stigma; subterminal line rufous, interrupted and punctiform; a rufous spot on termen below apex and some points on termen from it to vein 3. Hind wing white; the termen narrowly dusky. Underside of fore wing blackish except on inner margin and at apex; hind wing white, with a black spot on termen below middle.

Fore tibiæ with one claw and three spines on inner side and two claws and two spines on outer.

Hab. U.S.A., New Mexico, Hot Springs, Roswell (*Cockerell*), 1 ♀. *Exp.* 22 millim.

111. Schinia chrysella. (Plate LVI. fig. 12.)

Triccpis chrysellus, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 76 (1874); Smith, Cat. Noct. N. Am. p. 274.
Heliothis conchula, Feld. Reis. Nov. pl. 108. f. 41 (1874).

Head and thorax pale ferruginous mixed with whitish; abdomen white, slightly tinged with ochreous. Fore wing silvery white; the base pale ferruginous, with its outer edge somewhat concave;

a ferruginous medial band with somewhat darker sinuous edges, oblique from costa to lower angle of cell, where it is angled, then inwardly oblique; a pale ferruginous terminal band with dentate inner edge with darker or blackish spots on it, a white patch at apex, and a terminal series of black striæ on white spots; cilia ferruginous and white. Hind wing white, with diffused cupreous-brown terminal band.

Fore tibiæ with one claw and two spines on inner side and four claws on outer.

Hab. U.S.A., Texas, Dallas (*Boll*), 3 ♂, 3 ♀ type. *Exp.* 30 millim.

112. Schinia aleucis. (Plate LVI. fig. 14.)

Tricopis aleucis, Harv. Can. Ent. vii. p. 117 (1875); id. Bull. Buff. Soc. Nat. Sci. iii. p. 10, pl. 2. f. 5; Smith, Cat. Noct. N. Am. p. 275.

♂. Head and thorax white, mixed with pale fulvous and dark brown; abdomen white tinged with fulvous. Fore wing silvery white; the basal area pale fulvous, with waved outer edge produced on costa and inner margin to join the medial fulvous band with somewhat darker waved edges, constricted at middle and with its outer edge conjoined to a rounded spot beyond the discocellulars; the terminal area pale fulvous, narrowing to inner margin, and with a waved subterminal white line on it expanding into spots on costa and above tornus. Hind wing white, with pale fulvous terminal rather diffused band narrowing to tornus.

Fore tibiæ with one claw and two spines on inner side and four claws on outer.

Hab. U.S.A., Texas, 1 ♀ type. *Exp.* 28 millim.

113. Schinia? lucilinea. (Plate LVII. fig. 8.)

Heliothis lucilinea, Wlk. xv. 1749 (1858).

♀. (Fore legs wanting.) Head and thorax pale ochreous brown; pectus and legs mixed with white; abdomen white, dorsally tinged with ochreous. Fore wing pale ochreous brown; a pure white fascia occupying the cell and partially conjoined to a somewhat conical patch beyond it; diffused fuscous streaks on costa, subcostal and median nervures; an antemedial purplish-grey patch on inner area; the postmedial line white, defined on each side by purplish grey, strongly bent outwards below costa, excurved to vein 4, then slightly incurved; the subterminal line only defined by the area beyond it being rather paler; the termen rufous, with a series of minute deep black streaks in the interspaces. Hind wing white; the veins streaked with brown; the terminal area suffused with brown, narrowing to apex and tornus. Underside of fore wing white, the costal and terminal areas tinged with ochreous, a black subterminal band between veins 7 and 2, narrowing above; hind wing with obscure subterminal blackish band between vein 6 and submedian fold.

Hab. Haiti, 1 ♀ type. *Exp.* 34 millim.

*114. Schinia? neglecta.

Schinia neglecta, Streck. Lep. Rhop. & Het. Suppl. i. p. 10 (1898).

Pale ochreous. Fore wing with extremely slight traces of ante- and postmedial lines and reniform stigma; cilia white. Hind wing white, with an ochreous tinge especially towards inner margin; cilia white.

Hab. U.S.A., Colorado, Loveland. *Exp.* 23 millim. This species is unknown to me.

*115. Schinia diffusa. (Plate LIX. fig. 11.)

Schinia diffusa, Smith, Trans. Am. Ent. Soc. xviii. p. 125 (1891); id. Cat. Noct. N. Am. p. 279.

Head and thorax pale reddish grey; abdomen whitish. Fore wing pale reddish grey, with a faded washed-out appearance, the markings scarcely traceable; the basal and subterminal areas slightly darker in colour; antemedial line slender, pale, angled outwards in submedian interspace; reniform very ill-defined, dusky; postmedial line slender, crenulate, excurved from costa to vein 4, then incurved; subterminal line faintly marked at costa only. Hind wing whitish, very slightly tinged with reddish or yellowish. Underside whitish, irrorated with reddish towards termen.

Fore tibiæ with one claw and two spines on inner side and three claws on outer.

Hab. U.S.A., Colorado, S. Park. *Exp.* 27 millim. This species is unknown to me; figured from a photograph from type.

116. Schinia trifascia. (Plate LVI. fig. 16.)

Schinia trifascia, Hübn. Zutr. i. p. 11, ff. 33, 34 (1827); Smith, Cat. Noct. N. Am. p. 275.
Anthophila lineata, Wlk. xii. 830 (1857).

Head, thorax, and abdomen white tinged with pale olive-brown. Fore wing pale olive-brown; oblique narrow medial, postmedial, and subterminal white bands, the two former slightly bent inwards to costa. Hind wing white, tinged with pale olive-brown towards termen.

Fore tibiæ with one claw and two spines on inner side and five claws on outer.

Hab. U.S.A., E. of Rocky Mountains, 2 ♂ type *lineata*, Alabama 1 ♂, 1 ♀, Grote Coll., Colorado, Denver. *Exp.* 24–32 millim.

117. Schinia oleagina. (Plate LVI. fig. 17.)

Schinia oleagina, Morr. Proc. Ac. Nat. Sci. Phil. 1875, p. 67; Smith, Cat. Noct. N. Am. p. 276.

♂. Head, thorax, and abdomen brownish white, the last dorsally tinged with brown. Fore wing silky ochreous white tinged with pale olive-brown on basal area, becoming deeper in colour towards the whitish antemedial line, which is very oblique from costa to

middle of cell, where it is obtusely angled, then very oblique to inner margin near base; the postmedial line whitish, slightly excurved from costa to vein 4, then slightly incurved, the area beyond it rather darker to the nearly straight whitish subterminal line. Hind wing white; the terminal area slightly tinged with reddish, leaving a whitish patch on termen between veins 4 and 2. Underside of fore wing tinged with red beyond the cell from below costa to vein 3, a slight subterminal line.

Fore tibiæ with one claw and one spine on inner side and two claws and one spine on outer.

Hab. U.S.A., Colorado, Salida, 1 ♂. *Exp.* 34 millim.

118. Schinia gracilenta. (Plate LVI. fig. 18.)

Schinia gracilenta, Hübn. Zutr. i. p. 8, ff. 5, 6 (1827); Smith, Cat. Noct. N. Am. p. 276.

Head and thorax pale brown, the scales with pale tips; abdomen ochreous. Fore wing pale dull reddish brown irrorated with grey; the medial area often greyish; an ochreous-white antemedial line,

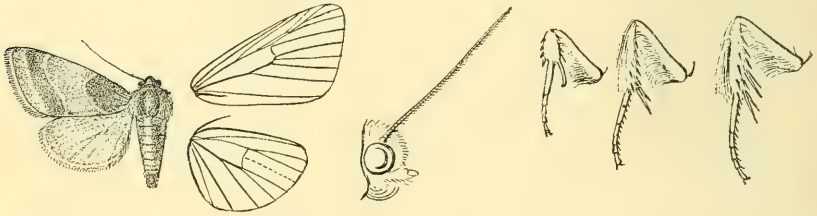


Fig. 29.—*Schinia gracilenta*, ♂. ½.

excurved from costa to median nervure, then oblique; a postmedial line slightly excurved from costa to vein 3, then slightly incurved; an oblique subterminal line. Hind wing pale ochreous, the terminal area slightly tinged with brown.

Fore tibiæ with one claw and two spines on inner side and four claws on outer.

Hab. U.S.A., S. States, Texas, 1 ♂, 2 ♀, Grote Coll. *Exp.* 34 millim.

119. Schinia sexplagiata. (Plate LVI. fig. 15.)

Schinia sexplagiata, Smith, Trans. Am. Ent. Soc. xviii. p. 124 (1891); id. Cat. Noct. N. Am. p. 275.
Schinia pyraloides, Streck. Lep. Rhop. & Het. Suppl. i. p. 9 (1899).

♂. Head and thorax pale reddish brown; abdomen white. Fore wing with the basal area red-brown, slightly irrorated with ochreous to the curved white antemedial line; the medial area brownish white irrorated with fuscous; reniform ill-defined, fuscous; the postmedial line white, strongly excurved from costa to vein 4, then strongly

incurved; the area beyond it brownish white irrorated with fuscous, and with dark brown patches on costal and inner areas before the white subterminal line which is slightly angled outwards at vein 7 and excurved at middle. Hind wing white, with slight dark discoidal lunule and fuscous brown terminal band, its inner edge excurved from costa to vein 4, then incurved; cilia white with brown line at base. Underside white; fore wing with small fuscous orbicular and reniform stigmata; hind wing with slight curved subterminal line.

♀. Fore wing with the medial and terminal areas darker.

Fore tibiæ with one claw and one spine on inner side and two claws and two spines on outer.

Hab. U.S.A., Colorado, Manitou, 1 ♂, 1 ♀. *Exp.* 26 millim.

*120. Schinia biundulata. (Plate LXIX. fig. 4.)

Schinia biundulata, Smith, Trans. Am. Ent. Soc. xviii. p. 129 (1891); id. Cat. Noct. N. Am. p. 275.

Head white with a slight olive tinge; thorax strongly tinged with olive; abdomen fuscous. Fore wing pale olivaceous, the terminal area somewhat paler; ante- and postmedial lines strong, white, the former excurved and defined on inner side by a few black scales, the latter excurved from costa to vein 4, then incurved, defined by a few black scales; cilia whitish. Hind wing whitish slightly tinged with olive; a dusky discoidal spot, and ill-defined terminal band. Underside of fore wing silver-grey, with the costa and termen narrowly yellowish; hind wing white, with slight discoidal spot.

Hab. U.S.A., Colorado. *Exp.* 23 millim. This species is unknown to me, figured from drawing from type in Brooklyn Inst. Arts & Sci.

121. Schinia separata. (Plate LVI. fig. 22.)

Lygranthœcia separata, Grote, Can. Ent. xi. p. 198 (1879); Smith, Cat. Noct. N. Am. p. 277.

♀. Head and thorax white slightly tinged with pale olive-brown; fore and mid tarsi slightly banded with olive; abdomen white. Fore wing white, entirely suffused with pale greyish olive-brown and slightly irrorated with white; the antemedial line white, defined by blackish on inner side, strongly excurved to origin of vein 2 and very oblique towards costa and inner margin; reniform blackish suffused with white and rather constricted at middle; the postmedial line white, slightly defined by black on outer side, oblique towards costa, excurved between veins 6 and 3, then sinuous; a weakly trisinuate white subterminal line almost touching the postmedial line at vein 5; cilia white. Hind wing white, with prominent black discoidal patch; a curved subterminal band confluent on apical area with the terminal line. Underside of fore wing with black spots at middle and end of cell and blackish subterminal band; hind wing with black discoidal spot and subterminal band.

Fore tibiæ with one claw and one spine on inner side and three claws on outer.

Hab. U.S.A., Nevada, 1 ♀ type. *Exp.* 34 millim.

122. Schinia acutilinea. (Plate LVI. fig. 21.)

Lygranthœcia acutilinea, Grote, Can. Ent. x. p. 232 (1878); id. Ill. Essay, 63, pl. 3. f. 34; Smith, Cat. Noct. N. Am. p. 277.

♂. Head, thorax, and abdomen clothed with black, olive and white scales; tibiæ and tarsi banded olive-brown and white. Fore wing white, mostly suffused with olive-brown and irrorated with black, the olive deepest before the antemedial and beyond the postmedial line; the antemedial line white, defined by black on inner side and minutely and irregularly dentate, acutely angled on vein 2 below the cell and very oblique towards costa and inner margin; an obscure blackish reniform spot somewhat constricted at middle; the postmedial line white, defined by black on outer side, minutely dentate, excurved from costa to vein 3, then incurved; an irregularly trisinuate white subterminal line defined by blackish on inner side; cilia chequered white and blackish. Hind wing white, irrorated and suffused with black, leaving white patches in and beyond cell and before inner half of termen; a blackish discoidal spot; a diffused postmedial band confluent on apical area with the terminal line. Underside of fore wing with black spots in middle and end of cell and blackish subterminal band; hind wing with black discoidal spots and postmedial band on inner half of wing.

Fore tibiæ with one claw and two spines on inner side and two claws on outer.

Hab. U.S.A., Colorado, 1 ♂ type, Montana, Utah. *Exp.* 30 millim.

*123. Schinia parmeliana.

Lygranthœcia parmeliana, H. Edw. Pap. ii. p. 14 (1882); Smith, Cat. Noct. N. Am. p. 277.

Head and thorax dull ochreous; abdomen fuscous. Fore wing dull ochreous with a greenish tinge; basal area suffused with olive-brown; antemedial line narrowly defined by white and angled outwards at median nervure; medial area paler, with a narrow medial olive-brown shade obscuring the large dark reniform stigma; postmedial line white, sinuous and clouded with brown at middle; postmedial area dark olive-brown, paler towards termen; a terminal series of black points. Hind wing pale fuscous, with the costal area and an obscure medial band whitish; cilia of both wings chequered brown and drab. Underside pale, with dusky discoidal spots and terminal areas.

Hab. U.S.A., Maryland. *Exp.* 24 millim. This species is unknown to me.

*124. Schinia obliqua. (Plate LIX. fig. 8.)

Schinia obliqua, Smith, Trans. Am. Ent. Soc. x. p. 229 (1889); id. Cat. Noct. N. Am. p. 276.

♂. Head and thorax white; abdomen tinged with brown. Fore wing white with the markings pale olive; the antemedial band oblique from costa to median nervure where it is angled, then

inwardly oblique; reniform defined by blackish and with an oblique olive shade from it to inner margin; postmedial line excurved from costa to vein 4, then incurved, with an olive band beyond it extending to the sinuous subterminal line; a terminal series of dark points. Hind wing white with slight discoidal spot and ill-defined olive subterminal band.

Fore tibiæ with one claw and three spines on inner side and three claws on outer.

Hab. U.S.A., Arizona. *Exp.* 25 millim. This species is unknown to me; figured from a photograph from type.

125. Schinia nundina. (Plate LVI. fig. 20.)

Noctua nundina, Drury, Ill. i. p. 35, pl. 18. f. 5 (1770); Smith, Cat. Noct. N. Am. p. 276.

Noctua nigrirena, Haw. Lep. Brit. p. 266 (1810); Steph. Ill. Brit. Ent., Haust. iii. p. 114.

Head, thorax, and abdomen white. Fore wing white; an olive mark at base of costa; an olive antemedial band with irregularly waved edge, angled at median nervure and narrowing towards inner margin; a black point in middle of cell with small olive spot on costa above it; the reniform black, much constricted at middle and with bluish-white discoidal lunule on it, placed on the olive medial shade which is broad and diffused from costa to vein 2, then retracted to below middle of cell, narrow and bisinuate; the postmedial line waved, white, excurved from costa to vein 3, then incurved, and expanding into patches on costa and inner area, with a broad olive band on its outer edge with irregularly trisinuate outer edge; a terminal series of black points. Hind wing white, with more or less developed olive discoidal lunule and subterminal band from costa to vein 1, diffused outwards to termen at apex. Underside with the discoidal spots and subterminal bands blackish.

Fore tibiæ with one claw and two spines on inner side and three claws on outer.

Hab. U.S.A., Middle, Southern, and Central States, 2 ♂, 1 ♀, New Jersey, Arizona, Mesilla (*Cockerell*), 1 ♂. *Exp.* 26–32 millim.

126. Schinia coercita. (Plate LVI. fig. 24.)

Lygranthœcia coercita, Grote, Papilio, i. p. 156 (1881); Smith, Cat. Noct. N. Am. p. 277.

♀. Head, thorax, and abdomen white, tinged with ochreous. Fore wing white suffused with ochreous brown; the antemedial line white, angled just below median nervure and oblique towards costa and inner margin, defined by darker brown on inner side; orbicular small, brown, elongate; reniform grey, brown-edged, constricted at middle and angled inwards on median nervure; the postmedial line white, excurved from costa to vein 3, then incurved; a broader subterminal white line angled inwards almost to the postmedial line in discal fold; a terminal series of black points; cilia white tinged with ochreous. Hind wing ochreous white, with brownish discoidal

line and the termen tinged with brownish. Underside of fore wing with the small orbicular and reniform stigmata black.

Fore tibiæ with one claw and two spines on inner side and four claws on outer.

Hab. U.S.A., Arizona, 1 ♀ type. *Exp.* 30 millim.

127. Schinia balba. (Plate LVI. fig. 23.)

Lygranthœcia balba, Grote, Papilio, i. p. 156 (1881); Smith, Cat. Noct. N. Am. p. 277.

♂. Head and base of tegulæ white tinged with ochreous; thorax pale yellow-brown; legs whitish and pale brown; abdomen white, banded with ochreous. Fore wing white tinged with ochreous; the base suffused with ochreous and irrorated with dark brown; an antemedial dark brown band from below costa to inner margin, angled just below median nervure and diffused on inner side; reniform lunulate, dark brown, with the oblique ochreous medial shade from it to inner margin; the postmedial line formed by a series of dark brown spots with a trisinuate brown band on its outer edge; a terminal series of dark points; cilia tinged with ochreous and with a faint dark line through them. Hind wing white irrorated with dark brown; a faint discoidal spot; the terminal area dark brown. Underside of fore wing with slight black streak in middle of cell and discoidal spot; hind wing white, slightly irrorated with brown and with brownish spot on termen towards tornus.

Fore tibiæ with one claw and two spines on inner side and three claws on outer.

Hab. U.S.A., Arizona, 1 ♂ type. *Exp.* 28 millim.

128. Schinia scutata. (Plate LXIX. fig. 5.)

Heliothis scutatus, Staud. Iris, viii. p. 361, pl. vi. f. 13 (1895); id. Cat. Lep. pal. p. 221.

Head and thorax white mixed with brown; abdomen white, tinged with brown above. Fore wing white; the basal area suffused with brown especially towards costa and antemedial line which is double, the inner line strong, highly curved and slightly sinuous; medial area slightly tinged with brown; orbicular small, round, obsolescent, with dark centre and defining line; reniform very large, with fuscous centre and pale annulus defined by brown, a brown patch on costa above it, a slight sinuous line from lower angle of cell to inner margin; the postmedial line double, the outer line strong, minutely dentate at the veins, bent outwards below costa, oblique to vein 6 where it is angled, strongly incurved below vein 4; subterminal line whitish, defined on inner side by a black patch at costa, then by brown, and on outer side by the terminal area being tinged with brown, angled outwards at vein 7 and inwards at submedian fold: a terminal series of small blackish lunules; cilia with a brown line through them. Hind wing white; the basal area tinged with brown; a large discoidal lunule; the terminal area fuscous, with ochreous-white patch between veins 2 and 5; cilia white. Under-

side white; fore wing with small black orbicular and large reniform stigmata.

Fore tibiæ with one claw and one spine on inner side and two claws on outer.

Hab. Mongolia, Uliassutai, 1 ♂, 1 ♀. *Exp.* 34–36 millim.

*129. Schinia arefacta. (Plate LXIX. fig. 6.)

Tamila arefacta, H. Edw. Pap. iv. p. 123 (1884); Smith, Cat. Noct. N. Am. p. 276.

♂. Head and thorax creamy white; abdomen reddish. Fore wing creamy white, with the bands pale brown; the basal shade not reaching the costa; medial shade waved with an interrupted band of rich dark brown on it; the postmedial shade with waved edges with a few dark brown scales on them representing the postmedial and subterminal lines. Hind wing reddish buff, with traces of double medial band. Underside deep buff; fore wing with a reddish tinge, the discal spot prominent.

Hab. U.S.A., Florida. *Exp.* 20 millim. This species is unknown to me, figured from a drawing from type in Brooklyn Inst. Arts & Sci.

*130. Schinia dolosa.

Schinia dolosa, Streck. Lep. Rhop. & Het., Suppl. i. p. 9 (1898).

Head and thorax dull greyish brown; abdomen whitish. Fore wing dull greyish brown; the basal and subterminal areas sometimes darker than the medial area; the lines whitish, distinct or ill-defined; the antemedial line evenly curved; the postmedial line fine, white, excurved from costa to vein 4, then incurved. Hind wing white, with black discoidal spot and broad, even, terminal black band; cilia white or white and fuscous. Underside white suffused with fuscous, the markings indistinct.

Hab. Texas, San Antonio (*Boll*). *Exp.* 22–25 millim. This species is unknown to me.

131. Schinia cupes. (Plate LVII. fig. 2.)

Heliothis cupes, Grote, Trans. Am. Ent. Soc. v. p. 113 (1875); id. Bull. Buff. Soc. Nat. Sci. ii. p. 311, pl. iii. f. 4; Smith, Cat. Noct. N. Am p. 280.

Heliothis crotchii, H. Edw. Proc. Cal. Ac. Sci. vi. p. 135 (1875).

♂. Head and thorax whitish mixed with pale brown, some of the scales tipped with black; abdomen ochreous white, dorsally tinged with brown. Fore wing ochreous white, tinged and irrorated with brown leaving the veins pale; a pale sinuous subbasal line from costa to submedian fold defined on inner side by brown; a pale antemedial line defined by brown, slightly angled outwards below costa and excurved below cell; the orbicular and reniform with grey centres, and brownish annuli defined by black; the postmedial line pale defined by brown, bent outwards below costa, slightly angled inwards in discal fold and strongly incurved below vein 3; a subterminal

series of pale and black dentate marks, bent outwards between veins 7 and 6 and angled inwards in discal and submedian folds; a terminal series of black striæ. Hind wing ochreous white, the veins and discoidal spot brown; a terminal dark brown band with pale subterminal spots on it between veins 1 and 4. Underside of fore wing with the orbicular and reniform stigmata black.

Fore tibiæ with one claw and two or three spines on inner side and four to six claws on outer.

Hab. U.S.A., 2 ♂ type, Washington, Oregon, Texas, Colorado, California, S. Diego, 1 ♂ type *crotchii*. *Exp.* 26–36 millim.

132. Schinia tertia. (Plate LVI. fig. 30.)

Tamila tertia, Grote, Proc. Ac. Nat. Sci. Phil. 1874, p. 212; Smith, Cat. Noct. N. Am. p. 279.

Head, thorax, and abdomen white slightly tinged with brownish ochreous, the thorax irrorated with dark brown scales; tarsi banded with brown. Fore wing with the basal area white, irrorated and suffused with brown and leaden grey; the antemedial line waved, black, with a similar indistinct line beyond it; the medial area ochreous white, the outlines of the claviform and orbicular indicated by some black scales; the terminal half of wing brown largely suffused with leaden grey; the reniform leaden grey, with black lines on its inner and outer edges; the postmedial line white, minutely waved, excurved from below costa to vein 3, then incurved, and with a series of black spots on its outer edge; some white points on costa towards apex; an irregularly dentate white subterminal line, angled outwards below costa and inwards in discal and submedian folds; a terminal series of black points; cilia brown at base, at tips chequered blackish-brown and white. Hind wing ochreous white; a brownish discoidal spot; a subterminal band and terminal line. Underside of fore wing with black spots in middle of cell and on discocellulars and blackish postmedial band.

Fore tibiæ with one claw and three spines on inner side and four claws on outer.

Hab. U.S.A., Texas, Dallas (*Boll*), 2 ♂, 3 ♀ type, New Mexico, Roswell (*Cockerell*), 1 ♂. *Exp.* 28–30 millim.

133. Schinia albafascia. (Plate LVI. fig. 31.)

Schinia albafascia, Smith, Trans. Am. Ent. Soc. x. p. 231 (1883); id. Cat. Noct. N. Am. p. 279.

♂. Head and thorax white, mixed with grey and brown scales; pectus, legs, and abdomen white, the last slightly tinged on dorsum with ochreous. Fore wing white, the basal area suffused with grey, blackish and rufous to the antemedial black line, which is erect and angled inwards in cell; orbicular and reniform indistinct, pale bluish grey defined by a few black scales, the former small, round, the latter placed on a very faint pale rufous band incurved to costa and below the cell; postmedial line black, interrupted at the veins,

excurved from below costa to vein 3, then incurved; the area beyond it rufous irrorated with white and the veins whitish; an ill-defined white subterminal line angled inwards in discal and submedian folds, and with some black marks and blue-grey suffusion before it; a terminal series of black points. Hind wing ochreous white, with greyish and fuscous discoidal spot; a pale brown and fuscous terminal band, broad at costa, angled inwards at vein 2 and narrowing to a point at tornus; a terminal series of black points; cilia white, brown at base. Underside of fore wing with the orbicular and reniform stigmata black; an irregular interrupted postmedial band; hind wing with black discoidal spot and patch above tornus.

Fore tibiæ with one claw and two spines on inner side and four claws on outer.

Hab. U.S.A., Utah, Fort Thornburgh, Colorado, South Park, Denver, 2 ♂. *Exp.* 24 millim.

134. Schinia brucei. (Plate LVI. fig. 26.)

Schinia brucei, Smith, Trans. Am. Ent. Soc. xviii. p. 125 (1891); id. Cat. Noct. N. Am. p. 278.

♂. Head, thorax, and abdomen ochreous white tinged with pale rufous. Fore wing ochreous white, suffused in parts and slightly irrorated with brown; the basal area suffused with reddish brown on costal half and before the antemedial line, which is angled slightly inwards below costa and outwards below cell, then oblique, whitish, defined by dark brown on inner side, diffused on outer; the medial area suffused with brown; the orbicular represented by a slight dark mark in cell; the reniform with diffused dark outline and pale centre; the postmedial line whitish, minutely crenulate, strongly excurved from costa to vein 4, then incurved, its outer edge defined by blackish scales followed by a rufous band extending to the pale outwardly diffused subterminal line, which is angled inwards in discal fold; the termen suffused with pale yellow-brown; a terminal series of black points. Hind wing ochreous white suffused with brown; a diffused brown discoidal lunule; the terminal area brown, narrowing to a point at tornus and with pale spots before termen between veins 2 and 4.

Fore tibiæ with one claw and two spines on inner side and two claws and one spine on outer.

Hab. U.S.A., Colorado, Denver, S. Park, Colorado Springs, 1 ♂. *Exp.* 30 millim.

135. Schinia unimacula. (Plate LVI. fig. 19.)

Schinia unimacula, Smith, Trans. Am. Ent. Soc. xviii. p. 126 (1891); id. Cat. Noct. N. Am. p. 276.

♀. Silvery white. Fore wing with dull blood-red antemedial narrow curved band obsolescent except between subcostal nervure and submedian fold where it is angled; reniform dull red, angled inwards on median nervure, a small white spot on its upper part, and the lower discocellular and end of median nervure white on its

lower part, an oblique pale reddish shade from it to inner margin: the postmedial line white, waved, dentate on veins 3 and 2, excurved below costa and at middle, incurved at discal fold and below vein 4, its outer edge defined by small red spots above and below vein 6 and patches below veins 3 and 2, the area beyond it tinged with red to the subterminal line which is slightly curved, with three somewhat dentate blood-red marks on its inner side below costa; the terminal area white, extending to inner side of subterminal line between veins 7 and 5; a terminal series of black points. Hind wing with pale reddish discoidal bar; the terminal area tinged with reddish, leaving a white patch before the reddish terminal line between veins 4 and 2. Underside of fore wing with dark discoidal lunule, reddish subterminal band, and terminal series of black points; hind wing with dark discoidal lunule, the terminal area tinged with reddish.

Fore tibiæ with one claw and one spine on inner side and three claws on outer.

Hab. U.S.A., Colorado, Colorado Spa, 1 ♀. *Exp.* 34 millim.

136. Schinia valsinghami. (Plate LVI. fig. 25.)

Lygranthœcia walsinghami, H. Edw. Papilio, i. p. 20 (1881); Smith, Cat. Noct. N. Am. p. 278.

Head, thorax, and abdomen white tinged with ochreous; fore tarsi banded with ochreous. Fore wing white suffused with ferruginous; the basal area ferruginous, the base of inner margin whitish; a waved white subbasal line from costa to vein 1; the antemedial line white, strongly angled just below median nervure, with a blackish line on its inner edge between it and the ferruginous area; the reniform an obscure dark-edged lunule; the postmedial line white, minutely dentate, excurved from costa to vein 3, then incurved, with a deep ferruginous band between it and the white subterminal line, which is excurved below costa and middle and angled inwards almost to the postmedial line in discal fold; cilia chequered white and pale ferruginous. Hind wing white, suffused with ferruginous except at base and inner margin; an obscure discoidal lunule distinct on underside; cilia white, underside of fore wing with the reniform stigma ferruginous.

Fore tibiæ with one claw and two spines on inner side and four claws on outer.

Hab. U.S.A., Oregon, Sheep Rock (*Walsingham*), 5 ♂, 7 ♀, type. *Exp.* 28–32 millim.

137. Schinia lanul. (Plate LVI. fig. 13.)

Heliothis lanul, Streck. Lep. Rhop. & Het. p. 132 (1877); Smith, Cat. Noct. N. Am. p. 285.

Tamila velaris, Grote, Can. Ent. xi. p. 197 (1879); Smith, Cat. Noct. N. Am. p. 274.

Schinia ochreifascia, Smith, Trans. Am. Ent. Soc. xviii. p. 126 (1883).

♀. Head and thorax white, mixed with pale fulvous; abdomen

white tinged with fulvous. Fore wing white, a curved pale fulvous antemedial band with sinuous edges and narrowing towards inner margin; a broader curved medial band, narrowing to inner margin, its outer edge excised below costa, with a small deep ferruginous discoidal lunule on its outer edge, followed by a small round spot beyond the cell; curved, minutely dentate, postmedial and subterminal fulvous lines with the area between them greyish; a deeper fulvous terminal band from apex to vein 4, with some blackish points on termen. Hind wing pale fulvous yellow, with slightly darker terminal band. Underside of fore wing with curved subterminal fulvous band.

Fore tibiæ with one claw and two spines on inner side and four claws on outer.

Hab. U.S.A., California, Caliente, 1 ♀ type *velaris*. *Exp.* 24 millim.

138. Schinia regia. (Plate LVI. fig. 32.)

Heliothis regia, Streck. Lep. Rhop. & Het. p. 121 (1876); Smith, Cat. Noct. N. Am. p. 279.

♀. White; frons, metathorax, and abdomen very slightly tinged with pale brown. Fore wing with the basal area rose-pink, its outer edge acutely angled on median nervure and very oblique towards costa and inner margin; the costal edge slightly tinged with pink; an oblique pale fawn-coloured medial shade conjoined to a diffused discoidal patch; a pink subterminal band, its inner edge excurved from costa to vein 3, then incurved, its outer slightly excised in discal and submedian folds; termen and cilia tinged with pale fawn-colour. Hind wing slightly tinged with pale fawn-colour, especially on discocellulars and terminal area, the latter with some diffused pink between veins 6 and 1.

Fore tibiæ with one claw and three spines on inner side and three claws on outer.

Hab. U.S.A., 1 ♀, Grote Coll., Kansas, Texas, Colorado. *Exp.* 30 millim.

*139. Schinia gloriosa.

Heliothis gloriosa, Streck. Lep. Rhop. & Het. p. 132 (1876); Smith, Cat. Noct. N. Am. p. 280.

Head, thorax, and abdomen white, with pale olive shades on dorsal surface. Fore wing dull purplish red and pale olive; basal area purplish; antemedial line white, somewhat dentate at the veins; medial area olive; reniform purple, extending to just beyond the dentate white postmedial line; terminal area purplish, olive towards termen, the veins being streaked with purplish; cilia pale and dark olive. Hind wing dirty white; a slight discoidal spot, the terminal area tinged with brownish; cilia white intersected with brown. Underside of fore wing white, with fuscous discoidal spot, a pale crimson shade towards apex and a broad

fuscous subterminal band, cilia fuscous and white; hind wing white, with slight discoidal spot, a slight crimson tinge towards apex.

Hab. U.S.A., Texas. *Exp.* 38 millim. This species is unknown to me.

140. Schinia sanguinea. (Plate LVII. fig. 1.)

Oria sanguinea, Geyer, Zutr. iv. p. 9, ff. 613, 614 (1832); Smith, Cat. Noct. N. Am. p. 279.
Schinia carminosa, Neum. Papilio, iii. p. 142 (1883).

Head, thorax, and abdomen white tinged with brown. Fore wing whitish, suffused with dull brown or in some specimens with purplish red; the basal area purple-red to the antemedial line, which is acutely angled just below median nervure and very oblique towards costa and inner margin; slight white streaks on the veins at the ante- and postmedial lines; an obscure diffused brown or blackish discoidal spot, rarely with a well-marked medial shade from it to inner margin; the postmedial line excurved from costa to vein 3, then incurved, with a purple-red band on its outer edge, emitting streaks to termen at veins 7, 5, 4 and at tornus; cilia brown or chequered brown and white. Hind wing brown, the cilia white at tips; the underside whitish, with indistinct discoidal spot and curved postmedial line.

Fore tibiæ with one claw and three spines on inner side and four claws on outer.

Hab. U.S.A., Texas, 3 ♂, 3 ♀, Florida. *Exp.* 32–36 millim.

141. Schinia saturata. (Plate LVI. fig. 29.)

Lygranthœcia saturata, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 74 (1874); Smith, Cat. Noct. N. Am. p. 278.
Heliothis rubiginosa, Streck. Lep. Rhop. & Het. p. 122 (1876).

♂. Head and thorax ochreous irrorated and suffused with rufous, the scales of thorax with pale tips; abdomen ochreous. Fore wing ochreous, suffused with bright rufous and irrorated with white; the antemedial line rather indistinct, white, waved, and excurved at median nervure; the postmedial line minutely waved, white, slightly defined by fuscous on outer side, bent outwards from below costa to vein 3; traces of a sinuous subterminal line; a terminal series of brown striæ. Hind wing yellow tinged with rufous, especially on discocellulars and terminal area. Underside with the costal and terminal areas irrorated with rufous, slight rufous discoidal spots.

Fore tibiæ with one claw and two spines on inner side and three claws on outer.

Hab. U.S.A., 1 ♂, Grote Coll., Massachusetts, Georgia, Florida, Texas, Kansas, S. California. *Exp.* 30 millim.

142. Schinia roseitincta. (Plate LVI. fig. 28.)

Lygranthœcia roseitincta, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 278 (1875); Smith, Cat. Noct. N. Am. p. 278.
Melicleptria exaltata, H. Edw. Papilio, iv. p. 124 (1884).

♂. Head and thorax fulvous orange; tibiæ and tarsi tinged

with pink; abdomen pink, greyish towards base of dorsum, the extremity orange. Fore wing pale dull olive-brown; the antemedial line indistinct, obtusely angled on median nervure, with a broad area of pink suffusion before it; the indistinct reniform sometimes with some pink scales on it; the postmedial line excurved from costa to vein 3, then incurved; the subterminal line angled inwards below costa and in discal fold, incurved below vein 3, and with the area between it and the postmedial line mostly suffused with pink. Hind wing crimson, with broad black-brown terminal band with sinuous inner edge and narrowing to a point at tornus. Underside of fore wing with blackish patch below base of cell; the discoidal spot black; the terminal area black except towards apex.

Fore tibiæ with one claw and two spines on inner side and three claws on outer.

Hab. U.S.A., Texas, 1 ♂ type, (*Belfrage*) 1 ♂, Colorado. *Exp.* 20 millim.

143. Schinia lynx. (Plate LVI. fig. 27.)

Anthœcia lynx, Guen. Noct. ii. p. 185 (1852); Grote, Proc. Ent. Soc. Phil. ii. p. 343, pl. vi. f. 6; Smith, Cat. Noct. N. Am. p. 278.

Head and thorax ochreous tinged with olive-brown; abdomen orange. Fore wing ochreous tinged with olive-brown; the antemedial line pale, angled on median nervure, oblique towards costa and inner margin, and with a broad diffused rufous band on its inner side; reniform lunulate, obscure, fuscous, on the indistinct rufous medial shade; the postmedial line pale, excurved from costa to vein 3, then incurved, with a rufous band between it and the indistinct pale subterminal line which is excurved below costa and middle and angled inward almost to the postmedial line in discal fold. Hind wing orange, the base and often the inner area suffused with black; a large black discoidal lunule, separate or conjoined at its lower extremity to the broad black terminal band which expands somewhat below middle; cilia orange, with a fuscous line through them. Underside with the discoidal spots prominent, black, conjoined to a large black patch on tornal area; streaks below base of cell and sometimes on fore wing, a spot in middle of cell.

Fore tibiæ with one claw and two spines on inner side and four claws on outer.

Hab. U.S.A., from Massachusetts to Florida east of Mississippi, 1 ♂, 4 ♀ type, Alabama, Texas, Bastrop Co., 1 ♂. *Exp.* 20–26 millim.

144. Schinia jaguarina. (Plate LVII. fig. 3.)

Anthœcia jaguarina, Guen. Noct. ii. p. 184, pl. 9. f. 11 (1852); Smith, Cat. Noct. N. Am. p. 280.

Head and thorax red-brown with a greyish tinge; abdomen orange, ochreous white below. Fore wing with the basal area olive-brown, becoming rufous towards the antemedial line, which is sharply angled below the cell and oblique towards costa and inner

margin; the medial area ochreous white tinged with brown; the reniform very faint, dusky, on traces of a waved medial line; the postmedial line pale, erect from costa to vein 4, then strongly incurved and bent outwards again to inner margin; the subterminal line incurved below vein 2, and with the area between it and the postmedial line olive-brown sometimes tinged with rufous; the termen pale, with a series of dark points. Hind wing orange, with a black discoidal lunule and terminal band with sinuous inner edge and an orange patch on it between veins 5 and 1. Underside of fore wing with the discoidal spot black, and sometimes a black streak below base of cell.

Ab. 1. Hind wing without discoidal spot; the terminal band obsolescent except towards apex.

Fore tibiæ with one claw and two spines on inner side and three claws on outer.

Hab. U.S.A., Kansas, Texas, 2 ♂, 1 ♀, Georgia, Nebraska, Colorado. *Exp.* 32–40 millim.

*145. Schinia petulans. (Plate LXIX. fig. 7.)

Anthœcia petulans, H. Edw. Papilio, iv. p. 123 (1884); Smith, Cat. Noct. N. Am. p. 281.

Head, thorax, abdomen, and legs dull orange. Fore wing ochreous, with the lines and bands deeper orange; basal area darker; antemedial line slightly angled outwards on subcostal nervure, then oblique; medial area shaded with orange, and with small pale discoidal spot; postmedial line bent outwards below costa, excurved to vein 4, then incurved; cilia ochreous. Hind wing pale orange, with some black suffusion at base; a small discoidal point; a moderately broad terminal band tinged with orange towards tornus. Underside pale orange; fore wing with black subterminal band more prominent at middle, a black discoidal spot and some black points near base; hind wing with the inner margin suffused with black, and a black discoidal spot.

Hab. U.S.A., Florida. *Exp.* 15 millim. This species is unknown to me, figured from a drawing from type in Brooklyn Inst. Arts & Sci.

146. Schinia arcigera. (Plate LVII. fig. 4.)

Anthœcia arcigera, Guen. Noct. ii. p. 184 (1852); Grote, Proc. Ent. Soc. Phil. ii. p. 340, pl. 6. fig. 3; Smith, Cat. Noct. N. Am. p. 280.
Anthœcia spraguei, Grote, Proc. Ent. Soc. Phil. ii. p. 341, pl. vi. ff. 4, 5 (1863).

Head and thorax bright rufous, sometimes tinged with crimson; pectus and legs orange, tinged in front with pink; abdomen orange. Fore wing with the basal area rufous or dark brown sometimes tinged with crimson and bounded by the highly curved white antemedial line; the medial area grey with a pinkish tinge; the reniform very indistinct, dusky, on traces of the dark medial shade; the postmedial line white, oblique from costa to vein 3, then slightly

incurved, and with a deep rufous band beyond it becoming greyish towards termen on which there is a series of dark points. Hind wing orange, with slight dark discoidal spot; the terminal half black-brown; the underside with the costal and terminal areas tinged with rufous.

♀. Head and thorax much darker; abdomen black suffused with grey; fore wing much darker; hind wing wholly black.

Fore tibiæ with one claw and two spines on inner side and three claws on outer.

Hab. CANADA, 1 ♂; U.S.A., E. & Middle States, N. York, 4 ♂, 1 ♀, Kansas, Texas, Dallas (*Boll*), 1 ♀, New Mexico (*Snow*), 1 ♂. *Exp.* 24–28 millim.

*147. Schinia sordida. (Plate LIX. fig. 12.)

Schinia sordidus, Smith, Trans. Am. Ent. Soc. x. p. 230 (1883); id. Cat. Noct. N. Am. p. 279.

Head, thorax, and abdomen pale rufous. Fore wing pale chocolate-brown; the extreme base, a narrow medial area, and an apical spot paler and yellower, the medial area tinged with pink; antemedial line distinct, white, crenulate; reniform dark, rather distinctly defined; postmedial line white, minutely waved and strongly excurved from below costa to vein 4; an indistinct sinuous yellowish subterminal line from apical patch to tornus. Hind wing black, with yellow patch on disk almost bisected by the large black discoidal spot; cilia pale. Underside of fore wing black, with narrow medial band, postmedial elliptical spot, and elongate apical spot yellow.

Fore tibiæ with a long claw on inner side and three claws on outer.

Hab. U.S.A., Texas, Alabama, Selina. *Exp.* 18 millim. This species is unknown to me; figured from a photograph from type.

148. Schinia limbalis. (Plate LVII. fig. 5.)

Lygranthœcia limbalis, Grote, Proc. Ac. Nat. Sci. Phil. 1875, p. 421; Smith, Cat. Noct. N. Am. p. 284.

♀. Head and thorax dark brown, the thorax tinged with crimson, the antennæ and pectus in front with fulvous; abdomen black, with the terminal segment ochreous. Fore wing dark brown, slightly tinged with crimson and irrorated with grey; a subbasal whitish mark in cell; a spot on middle of costa and a triangular patch from submedian fold to inner margin. Hind wing black-brown, irrorated with grey; the cilia white slightly mixed with black.

Fore tibiæ with one claw and one spine on inner side and three claws on outer.

Hab. U.S.A., Kansas, 1 ♀ type. *Exp.* 20 millim.

Genus **EUPANYCHIS.**

Type.

Eupanychis, Grote, Revised Check-List, p. 34 (1890), non descr.... *spinosæ.*

Proboscis fully developed; palpi porrect to well beyond frons, the 2nd joint clothed with long hair, the 3rd short; frons with small rounded prominence with curved corneous plate below it; antennæ of male ciliated; fore tibiæ short and broad, with one curved claw and one spine on inner side, and one claw and two spines on outer; mid and hind tibiæ spined. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

A. Hind wing white, with black discoidal spot and terminal band ..... *spinosæ.*
B. Hind wing yellow, the terminal area tinged with rufous ... *mexicana.*
C. Hind wing pale reddish, deepening to copper-red at termen. *crenilinea.*

149. Eupanychis spinosæ.

Heliothis spinosæ, Guen. Noct. ii. p. 182, pl. ix. f. 10 (1852); Smith, Cat. Noct. N. Am. p. 281.
Anthœcia hirtella, Grote & Rob. Proc. Ent. Soc. Phil. vi. p. 19, pl. iii. f. 3 (1866).

♂. Head and thorax white mixed with rufous; tarsi banded with brown; abdomen white, dorsally tinged with fuscous and with rufous towards extremity. Fore wing white, irrorated and suffused with pale olive-brown; the antemedial line white, angled outwards at median nervure, then obliquely curved and with a diffused rufous band on its inner edge; the reniform defined at

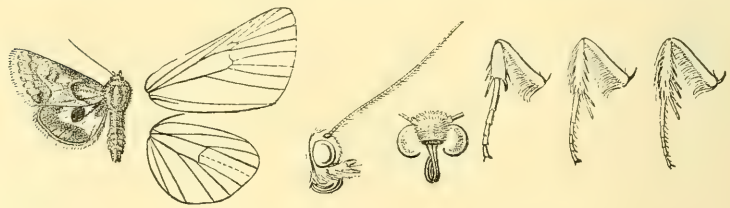


Fig. 30.—*Eupanychis spinosæ*, ♂. ½.

sides with black, and with some rufous above it on costa; the post-medial line white, excurved from costa to vein 3, then strongly incurved, and with a rufous band between it and the indistinct whitish subterminal line which is slightly angled outwards at vein 6 and excurved below middle; a terminal series of black points. Hind wing yellowish white; the base and inner margin blackish; a large, very prominent black discoidal spot, a broad terminal black band with its inner edge angled outwards at discal fold, then incurved; a slight pale subterminal mark below vein 3; cilia white

at tips. Underside of both wings with subbasal black spots in and below cell and discoidal spots; the costal area of both wings suffused with ferruginous red.

Hab. Canada; U.S.A., 1 ♂ Grote Coll., Eastern, Middle, and Central States. *Exp.* 26 millim.

150. **Eupanychis mexicana**, n. sp. (Plate LVII. fig. 9.)

♂. Head and thorax pale ochreous mixed with brown; abdomen orange. Fore wing pale ochreous, tinged with pale brown and irrorated with dark brown; a pale curved subbasal line from costa to submedian fold; the antemedial line pale, acutely angled inwards in submedian fold and excurved towards costa and inner margin; the orbicular and reniform defined by a few dark scales, with grey-brown centres and pale annuli, the former very indistinct, round, the latter more prominent; a pale postmedial line strongly bent outwards below costa, oblique to vein 3, then incurved; the terminal area with rather stronger, dark irroration; a pale, highly and rather irregularly dentate subterminal line; a terminal series of brown striæ; cilia ochreous mixed with fuscous. Hind wing orange-yellow, with diffused, obscurely dentate, subterminal and terminal reddish bands. Underside of fore wing with the costal and terminal area strongly irrorated with red; a red point in cell, discoidal spot, and postmedial line excurved from costa to vein 3; hind wing with the costal and apical areas irrorated with red; a discoidal spot and curved postmedial line.

Hab. Mexico, Jalisco (*Schaus*), 1 ♂ type. *Exp.* 36 millim.

*151. **Eupanychis crenilinea.** (Plate LXIX. fig. 8.)

Schinia crenilinea, Smith, Trans. Am. Ent. Soc. xviii. p. 129 (1891); id. Cat. Noct. N. Am. p. 281.

Head and thorax yellowish white, the latter with some ochreous scales; abdomen whitish. Fore wing whitish mixed with ochreous, the markings brownish ochreous; a broad dusky subbasal band bounded by the curved white antemedial line, which is somewhat denticulate at the veins and defined on inner side by some black scales; a dusky medial shade; reniform an ill-defined dark bar; postmedial line white, defined on outer side by black scales, dentate and produced to points at the veins, slightly excurved from costa to vein 4, then incurved; the area beyond it brownish to the subterminal line, which is strongly angled inwards at discal fold, less strongly at submedian fold; a slight terminal series of dark points. Hind wing pale, slightly tinged with reddish, deepening to coppery red at termen. Underside uniform coppery red, except the base of hind wing which is paler.

Hab. U.S.A., S. Texas. *Exp.* 23 millim. This species is unknown to me, figured from a drawing from type in Brooklyn Inst. Arts & Sci.

Genus GROTELLA.

Grotella, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 278 (1874). Type. *septempunctata.*

Proboscis fully developed; palpi short, the 2nd joint upturned and moderately scaled, the 3rd porrect, naked; frons with large hollowed-out process with corneous walls, and with obliquely truncate central process hollowed out in front; eyes smooth, not ciliated; antennæ simple, laminate in both sexes; fore tibiæ with long curved claw, and two slender spines on inner side at extremity and short claw on outer side; mid tibiæ strongly spined; hind tibiæ with slight spine between the medial and terminal spurs; abdomen and wings smoothly scaled. Fore wing with vein 3 from before angle of cell; 5 from above angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 free. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

A. Fore wing with ante- and postmedial series of small black spots ..... *septempunctata.*
B. Fore wing wholly white ..... *dis.*

152. Grotella septempunctata.

Grotella septempunctata, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 278 (1874); Smith, Cat. Noct. N. Am. p. 266.

Head and thorax pure white; palpi and frons black-brown; antennæ yellow; tibiæ and tarsi banded with black; abdomen brown, tinged with yellowish white. Fore wing almost pure white; the costal edge black towards base; subbasal black points below costa and cell; small antemedial black spots on costa, in submedian fold, and on inner margin, the spot in the fold slightly nearer the

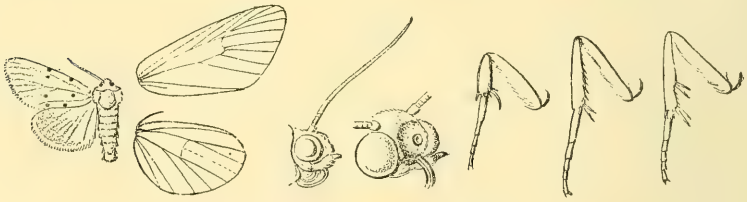


Fig. 31.—*Grotella septempunctata*, ♂. ½.

base; small postmedial black spots on costa, discocellulars, in submedian fold and on inner margin. Hind wing white, the apical area to the discocellulars and vein 3 tinged with fuscous brown. Underside of fore wing, except the inner area and cilia, and the costal area of hind wing fuscous brown.

Hab. U.S.A., Texas, 1 ♂ type, Colorado (*Smith*), 1 ♀, Manitou (*Brook*), 1 ♀. *Exp.* 30 millim.

153. Grotella dis. (Plate LVII. fig. 10.)

Grotella dis, Grote, A. M. N. H. (5) xi. p. 55 (1883); Smith, Cat. Noct. N. Am. p. 266.

♀. Head and thorax white; antennæ ochreous; pectus, legs,

and abdomen tinged with brown. Fore wing pure white, the costal edge black towards base. Hind wing white suffused with fuscous; the cilia pure white. Underside of fore wing suffused with fuscous; hind wing white, with curved postmedial line, the costal and terminal areas suffused with fuscous.

Hab. U.S.A., Kansas, Argus Mts., 1 ♂, N. Mexico, Hot Springs, 7000 ft., Arizona. *Exp.* 30 millim.

Genus **MELICLEPTRIA.**

	Type.
Melicleptria, Hübn. Verz. p. 262 (1827)	*scutosa.*
Canthylidia, Butl. Trans. Ent. Soc. 1886, p. 406	*pallida.*

Proboscis fully developed; palpi obliquely porrect to just beyond frons, and slightly fringed with hair below; frons with rounded prominence with corneous plate below it; eyes large, rounded; antennæ of male ciliated; head and thorax smoothly clothed with hair and scales; fore tibiæ short and broad, with long curved claw and two spines on inner side, and shorter claw or spine on outer; mid and hind tibiæ spined. Fore wing with the apex somewhat produced; veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

Sect. I. (*Canthylidia*). Fore wing of male with glandular swelling on costa just beyond middle and elongate depressed brands below costa and in cell.

A. Fore wing with prominent claviform, orbicular, and reniform stigmata ..... *cistella.*
B. Fore wing without stigmata.
  a. Fore wing with distinct white fascia in discal fold.
    a^1. Fore wing with the ground-colour purplish pink ..... *eodora.*
    b^1. Fore wing with the ground-colour not pink.
      a^2. Fore wing with subterminal series of white spots ... *cladota.*
      b^2. Fore wing without subterminal series of white spots.
        a^3. Fore wing with white fascia in submedian interspace ..... *mesoleuca.*
        b^3. Fore wing without white fascia in submedian interspace.
          a^4. Fore wing with more or less prominent dark streaks on the veins..... *neurias.*
          b^4. Fore wing without dark streaks on the veins.
            a^5. Fore wing dark brown irrorated with fuscous; hind wing brown..... *cramboides.*
            b^5. Fore wing pale yellow-brown; hind wing white..... *osmida.*
  b. Fore wing with indistinct or without fascia in discal fold.
    a^1. Fore wing without postmedial series of dark points on the veins.
      a^2. Fore wing with the costal and inner areas suffused with red..... *ionola.*
      b^2. Fore wing with the costal and inner areas not suffused with red.
        a^3. Hind wing with the ground-colour white.
          a^4. Fore wing white, more or less irrorated with fuscous ..... *pallida.*
          b^4. Fore wing pale silky ochreous, the inner area suffused with brown ..... *canusina.*
        b^3. Hind wing brown ..... *moribunda.*

b^1. Fore wing with postmedial series of dark points on the veins.
a^2. Fore wing without terminal series of points ..... *aleurota.*
b^2. Fore wing with terminal series of dark points ..... *aberrans.*

154. Melicleptria cistella. (Plate LVII. fig. 11.)

Canthylidia cistella, Swinh. A. M. N. H. (7) viii. p. 127 (1901).

♀. Ochreous white; antennæ, thorax, and abdomen dorsally tinged with brown. Fore wing with straight diffused brownish antemedial line; claviform, orbicular, and reniform prominent, black, usually with white centres, the 1st short, the 2nd elliptical or small, the last open above and below; a pale brown postmedial line, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line with diffused fuscous on its inner edge, angled outwards at vein 7, interrupted at discal fold and excurved below it; termen brownish, with series of black points. Hind wing whiter, with diffused brownish subterminal band expanding to termen at apex. Underside of fore wing with the orbicular, reniform, and postmedial band blackish.

Hab. W. Australia, Sherlock R. (*Clements*), 4 ♀. *Exp.* 24 millim. Type † in Mus. Oxon.

155. Melicleptria eodora. (Plate LVII. fig. 12.)

Heliothis eodora, Meyr. Trans. Ent. Soc. 1902, p. 26.
Canthylidia tenuistria, Turner, Proc. Linn. Soc. N. S. W. 1902, p. 79.

Head and thorax whitish tinged with pink; abdomen whitish, dorsally suffused with ochreous. Fore wing flesh-red, suffused with purplish pink and white except the terminal area; the costal edge and inner margin white; a narrow yellowish-white fascia from middle of cell to termen, slender streaks above veins 7, 6, and 4, and traces of a streak in base of submedian fold. Hind wing yellowish white, the terminal area suffused with brown extending inwards to below the cell. Underside of fore wing suffused with pale brown.

Hab. Queensland, Brisbane (*Turner*), 1 ♂, 1 ♀; W. Australia, Sherlock R. (*Clements*), 1 ♂, 2 ♀; N. S. Wales, type † ♂ in Coll. Meyrick. *Exp.* 32 millim. Type † *tenuistria* in Coll. Turner.

156. Melicleptria cladota. (Plate LVII. fig. 13.)

Heliocheilus cladotus, Swinh. A. M. N. H. (7) viii. p. 126 (1901).

Head and thorax pale yellow-brown, with some white on vertex of head and metathorax; pectus white; legs pale brown and white; abdomen white, dorsally tinged with yellow-brown. Fore wing pale yellow-brown, with white fasciæ on costal area, through the cell to termen, and in submedian interspace; a series of white spots

in the interspaces of terminal area; a terminal series of dark brown points; cilia white at tips. Hind wing white; the veins streaked with brown towards termen; a more or less developed diffused subterminal yellow-brown band; a brown line at base of cilia sometimes present.

Hab. W. Australia, Sherlock R. (*Clements*), 1 ♂, 4 ♀, Raebourne, 1 ♂. *Exp.* 26–36 millim. Type † in Mus. Oxon.

*157. Melicleptria mesoleuca. (Plate LVII. fig. 14.)

Canthylidia mesoleuca, Lower, ined.

♀. Head and thorax pale yellow-brown; palpi below, pectus, legs, and abdomen white. Fore wing silky golden brown, irrorated with white; a white streak in discal fold from middle of cell to termen, a slight streak above vein 6, and a streak in submedian fold from base to termen, narrowing towards base. Hind wing white irrorated with brown; the terminal area suffused with brown from apex to vein 2.

Hab. N. S. Wales, Broken Hill, type † ♀ in Coll. Lower. *Exp.* 28 millim.

158. Melicleptria neurias. (Plate LVII. fig. 15.)

Heliothis neurias, Meyr. Trans. Ent. Soc. 1902, p. 26.

Head and thorax yellowish brown or grey-brown; pectus and legs white and brown; abdomen white, dorsally tinged with yellow-brown. Fore wing pale yellow-brown or grey-brown; the veins more or less prominently streaked with dark brown; a white fascia through the cell to termen; the interspaces of terminal area sometimes streaked with whitish; a terminal series of dark points. Hind wing white, suffused with brown except on costal area or towards termen only.

Hab. N. Australia, Cassini I. (*J. J. Walker*), 1 ♂, Port Darwin, 1 ♀, type † ♀ in Coll. Meyrick; W. Australia, Sherlock R. (*Clements*), 3 ♂, 6 ♀. *Exp.* 26–34 millim.

159. Melicleptria cramboides. (Plate LVII. fig. 16.)

Leucania cramboides, Guen. Noct. i. p. 84 (1852).

Rather dark grey-brown. Fore wing with white fascia through the cell to termen. Hind wing slightly paler; the underside whitish, with the veins and termen tinged with brown.

Hab. Victoria (*Raynor*), 2 ♂, 1 ♀. *Exp.* 34–40 millim.

160. Melicleptria osmida. (Plate LVII. fig. 17.)

Heliocheilus osmidus, Swinh. A. M. N. H. (7) viii. p. 126 (1901).

Head and thorax pale yellow-brown; pectus and legs white and pale brown; abdomen white, dorsally tinged with pale yellow-brown. Fore wing pale yellow-brown, with a white fascia through

the cell to termen. Hind wing pure white, slightly tinged with pale brown at apex in female.

Hab. W. Australia, Sherlock R. (*Clements*), 1 ♂, 1 ♀. *Exp.*, ♂ 28, ♀ 30 millim. Type † in Mus. Oxon.

161. **Melicleptria ionola.** (Plate LVII. fig. 18.)

Adisura ionola, Swinh. A. M. N. H. (7) viii. p. 128 (1901).

Head and thorax ochreous, strongly tinged with rufous; abdomen ochreous, dorsally tinged with rufous. Fore wing pale ochreous suffused with dull purplish rose, leaving a fascia of the ground-colour in and beyond cell from before middle to termen and some ochreous on inner margin; a terminal series of dark points usually present; cilia ochreous. Hind wing pale ochreous, suffused with fuscous wholly or on terminal area only. Underside of fore wing ochreous suffused with fuscous, except in cell and on costal and apical areas, the orbicular represented by a small fuscous spot, the reniform by a larger spot.

Hab. W. Australia, Sherlock R. (*Clements*), 5 ♂, 5 ♀. *Exp.* 26–30 millim. Type † in Mus. Oxon.

162. **Melicleptria pallida.**

Canthylidia pallida, Butl. Trans. Ent. Soc. 1886, p. 406, pl. ix. f. 9.

Head and thorax white mixed with pale brown; abdomen white, dorsally tinged with ochreous. Fore wing white, thickly irrorated with pale grey-brown and with more or less distinct

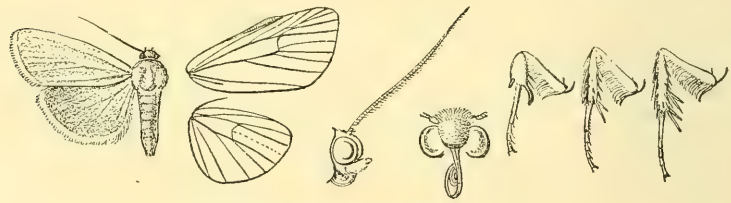


Fig. 32.—*Melicleptria pallida*, ♂. ½.

traces of a white fascia from middle of cell to termen. Hind wing white; the terminal area suffused with fuscous brown, less prominently towards tornus.

Hab. N. Australia, Baudin I. (*J. J. Walker*), 1 ♀; W. Australia, Sherlock R. (*Clements*), 7 ♂, 5 ♀; Queensland, Brisbane (*Turner*), 1 ♂, 1 ♀, Gayndah, 2 ♂, type. *Exp.* 26–30 millim.

163. **Melicleptria canusina.** (Plate LVII. fig. 19.)

Canthylidia canusina, Swinh. A. M. N. H. (7) viii. p. 127 (1901).

Head and thorax white mixed with grey-brown and with a slight yellowish tinge; abdomen white, dorsally tinged with ochreous.

Fore wing silky ochreous white, with more or less prominent and extensive dark brown suffusion on inner area below the cell and vein 4. Hind wing white, with a slight ochreous tinge; the veins and terminal area more or less suffused with brown.

Hab. W. Australia, Sherlock R. (*Clements*), 3 ♂, 1 ♀. *Exp.* 22–26 millim. Type † in Mus. Oxon.

164. **Melicleptria moribunda.** (Plate LVII. fig. 20.)

Leucania moribunda, Guen. Noct. i. p. 95 (1852).
Leucania invaria, Wlk. ix. 111 (1856).
Leucania fumata, Lucas, Pr. Linn. Soc. N. S. W. (2) iv. p. 1098 (1889).

Ochreous, more or less thickly irrorated with fuscous brown; head and thorax tinged with fuscous. Hind wing suffused with fuscous towards termen. Underside of fore wing with obscure discoidal spot.

Hab. Queensland, Brisbane (*Turner*), 1 ♂, 1 ♀; N. S. Wales, Sydney (*Raynor*), 6 ♂, 6 ♀, type and type *invaria*. *Exp.* 28–30 millim.

165. **Melicleptria aleurota.** (Plate LVII. fig. 21.)

Canthylidia aleurota, Lower, ined.

Head and thorax grey-white mixed with brown; abdomen white, dorsally tinged with ochreous. Fore wing grey-white, thickly irrorated with brown; a more or less developed postmedial series of black points on the veins excurved from costa to vein 4, then oblique. Hind wing white suffused with dark brown, especially towards termen; cilia white. Underside of fore wing with the disk suffused with brown and with dark discoidal spot; hind wing white, slightly irrorated with brown.

Hab. W. Australia, Sherlock R. (*Clements*), 2 ♂, 2 ♀, Derby, 1 ♂. *Exp.* 26 millim. Type † in Coll. Lower.

166. **Melicleptria aberrans.** (Plate LVII. fig. 22.)

Heliothis aberrans, Butl. Trans. Ent. Soc. 1886, p. 405.

♂. Head and thorax dull brown; abdomen whitish brown. Fore wing pale dull brown; slight antemedial dark points on median nervure and vein 1, with traces of a diffused oblique band beyond them; a postmedial series of small almost dentate black spots curved from costa to vein 4, then oblique; traces of a rather paler streak from middle of cell to termen and of some subterminal spots; a terminal series of black points. Hind wing pale brown; the terminal area suffused with dark brown, leaving a pale subterminal mark above and below vein 3.

Hab. Queensland, Peak Downs, 1 ♂ type. *Exp.* 28 millim.

Sect. II. (*Melicleptria*). Fore wing of male normal.

167. Melicleptria scutosa.

Noctua scutosa, Schiff. Wien. Verz. p. 89 (1776); Fabr. Mant. Ins. ii. p. 142 (1787); Esp. Schmett. pl. 108. ff. 1, 2; Hübn. Schmett. Eur. Noct. f. 309; Dup. Lép. Fr. vii. pl. 119. f. 1; Hmpsn. Moths Ind. ii. p. 175; Staud. Cat. Lep. pal. p. 221; Smith, Cat. Noct. N. Am. p. 271. *Heliothis nuchalis*, Grote, Can. Ent. x. p. 68 (1878).

Head and thorax clothed with greyish, olive, and dark brown hair; pectus and legs whitish, the latter irrorated with dark brown; abdomen greyish irrorated with fuscous, the anal tuft ochreous. Fore wing ochreous whitish, the marginal areas tinged with olive-brown and irrorated with fuscous; a curved subbasal line from costa to submedian fold; a blackish streak below base of vein 1; the antemedial line minutely dentate to median nervure, then angled outwards to middle of wing below vein 1; stigmata olive-brown outlined with black, claviform large elliptical, orbicular round, reniform large; the postmedial line minutely waved, bent outwards below costa, oblique to below vein 5, inwardly oblique to vein 3, then more erect, a brown band with pale points on costa between it and the whitish subterminal line, which is dentate inwards below costa, excurved at middle and has some blackish

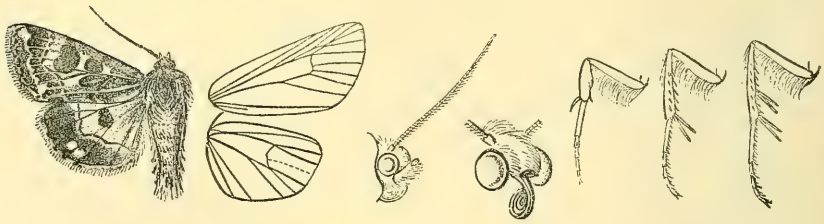


Fig. 33.—*Melicleptria scutosa*, ♂. ½.

points on its inner edge; a terminal series of black and white striæ. Hind wing white, the veins streaked with brown; a large black discoidal lunule; the postmedial line minutely waved, angled outwards at discal fold; the terminal area broadly black-brown, its inner edge following the postmedial line and with two pale subterminal spots at middle; cilia white, with brown line at base. Underside with the ground-colour white; fore wing with the orbicular, reniform, and claviform black.

Fore tibiæ with long claw on inner side and spine on outer.

Hab. U.S.A., Kansas, 1 ♀, type *nuchalis*, Montana, Colorado; Europe, Central and Southern, Britain, France, Germany, Zeller & Frey Colls., Spain, Italy, Sweden, Bulgaria (*Mrs. Nicholl*), 1 ♀; Algiers; Armenia; C. Asia; Corea, Gensan (*Leech*), 2 ♀; E. China, Wei-ha-Wei (*Fletcher*), 3 ♀, Shanghai (*Pryer*), 1 ♀; Kashmir, Scind and Goorais Valleys, Dras, Kiris (*Leech*), 3 ♂, 2 ♀; Kulu (*G. Young*), 2 ♂, 2 ♀, Rawal Pindi, 1 ♀. *Exp.* 30–38 millim.

Larva. Meyr. Brit. Lep. p. 109; Barrett, Lep. Brit. vi. p. 166.

Green; dorsal and spiracular lines yellow, black-edged; subdorsal line freckled with black; head green. Food-plant, *Artemisia*, July.

Genus TIMORA.

	Type.
Timora, Wlk. ix. 132 (1856)	*senegalensis.*
Sophaga, Moore, P. Z. S. 1881, p. 362	*sinuata.*
Dorika, Moore, P. Z. S. 1881, p. 363	*sanguinolenta.*
Masalia, Moore, P. Z. S. 1881, p. 364	*radiata.*
Pradatta, Moore, P. Z. S. 1881, p. 364	*beatrix.*
Curubasa, Moore, P. Z. S. 1881, p. 366	*lanceolata.*
Rhodosea, Grote, Can. Ent. xv. p. 4 (1883)	*julia.*

Proboscis fully developed; palpi porrect to just beyond frons and fringed with hair below; frons with rounded prominence with corneous plate below it; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with hair and scales; fore tibiæ short and broad, with long curved claw on inner side and short claw on outer; mid and hind tibiæ spined; abdomen smoothly scaled. Fore wing rather narrow, the apex somewhat produced; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole, which is long and narrow; 11 from cell. Hind wing with veins 3, 4 from angle of cell, rarely stalked; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

Sect. I. (*Rhodosea*). Fore wing of male with glandular swelling on costa beyond middle and slight elongate depressions below costa and in cell.

168. Timora julia.

Rhodosea julia, Grote, Can. Ent. xv. p. 5 (1883); Smith, Cat. Noct. N. Am. p. 272.

Adisura grandis, Druce, P. Z. S. 1890, p. 516; id. Biol. Cent.-Amer., Het. ii. p. 490, pl. 94. f. 21.

♂. Head bright pink; palpi white below; thorax pink mixed with white; abdomen pale ochreous. Fore wing bright pink; some yellowish white at base of inner area; a white fascia through

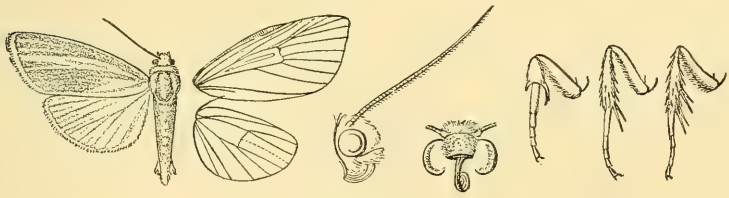


Fig. 34.—*Timora julia*, ♂. ½.

the cell to near termen and slight streaks above veins 4 and 6; costal edge and cilia white. Hind wing pure white. Underside of fore wing white, the costal area tinged with pink, the disk suffused with fuscous above and below the white fascia.

Hab. U.S.A., California, 1 ♂, New Mexico, Arizona; Mexico, Jalisco, Lake Chapala (*Richardson*), 1 ♂, type *grandis*, Godman-Salvin Coll. *Exp.* 34 millim.

Sect. II. Fore wing of male normal.

A. Hind wing of male with veins 3, 4 stalked.

169. Timora dora.

Masalia dora, Swinh. Trans. Ent. Soc. 1891, p. 147 ; Hmpsn. Moths Ind. ii. p. 180.

♂. Head and thorax brownish ochreous; abdomen ochreous. Fore wing deep ochreous-yellow, thickly irrorated with long brown scales; the costal area tinged with pink; an ill-defined yellowish spot in end of cell, with brownish suffusion round it; an oblique brown mark from apex and an indistinct curved subterminal series of brown spots on the veins. Hind wing pale ochreous. Underside of fore wing with the disk suffused with fuscous.

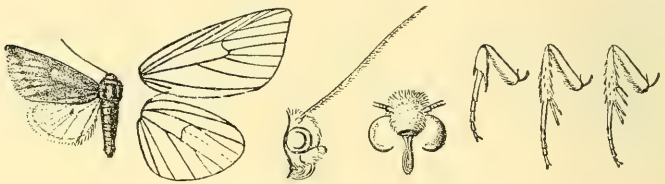


Fig. 35.—*Timora dora*, ♂. ½.

♀. Fore wing with the dark irroration and markings replaced by very obscure diffused red markings.

Ab. 1. Hind wing with the basal half suffused with fuscous, extending as streaks on the veins towards termen.—Belgaum.

Hab. Bombay, Khandalla (*Swinhoe*), 1 ♂, 1 ♀ type; Madras, Belgaum (*Watson*), 1 ♀. *Exp.*, ♂ 26, ♀ 30 millim.

B. Hind wing of male with veins 3, 4 from cell.

a. Fore wing with oblique postmedial pink band with white points on it.
  a^1. Hind wing suffused with pink ..... *metarhoda*.
  b^1. Hind wing not suffused with pink.
    a^2. Fore wing with pink fascia in cell ..... *decorata*.
    b^2. Fore wing with pink fascia below costa ..... *leucosticta*.
b. Fore wing with oblique postmedial pink band with series of white points on its inner side ..... *albiseriata*.
c. Fore wing without pink postmedial band with white points on it.
  a^1. Fore wing with terminal series of black points.
    a^2. Fore wing with dentate postmedial line ..... *sinuata*.
    b^2. Fore wing with curved postmedial series of points. *aureola*.
    c^2. Fore wing without postmedial line or points.
      a^3. Fore wing with black medial fascia ..... *senegalensis*.
      b^3. Fore wing without black medial fascia ..... *nubila*.
  b^1. Fore wing without terminal series of black points.
    a^2. Fore wing with curved postmedial series of points.
      a^3. Fore wing not irrorated with black.
        a^4. Fore wing golden yellow, with fiery red streaks on the veins ..... *sanguinolenta*.

b^4. Fore wing yellowish, the costal area tinged with pink, the inner area with fuscous ..... *uncta.*
b^3. Fore wing irrorated with black ..... *irrorata.*
b^2. Fore wing without postmedial series of points.
a^3. Fore wing with black point at upper angle of cell.
a^4. Fore wing with the costal and inner areas slightly tinged with pink, the medial nervure with fuscous ..... *bimaculata.*
b^4. Fore wing with the costal and inner areas deep pink, a black fascia on median nervure... *nigrifasciata.*
b^3. Fore wing without black point at upper angle of cell.
a^4. Fore wing with prominent black fascia on median nervure.
a^5. Fore wing with black fasciæ on veins 6 and 1. *trifasciata.*
b^5. Fore wing without black fasciæ on veins 6 and 1..... *nigristriata.*
b^4. Fore wing without prominent black fascia on median nervure.
a^5. Fore wing with white fascia on median nervure furcate at the veins..... *fissifascia.*
b^5. Fore wing without white fascia on median nervure.
a^6. Fore wing with white points in cell and on discocellulars.
a^7. Fore wing with the area beyond the cell pink ..... *flavirosea.*
b^7. Fore wing with the area beyond the cell ochreous except the costal and submedian fasciæ ..... *disticta.*
b^6. Fore wing without white points in cell.
a^7. Fore wing with well-defined pink fasciæ on costal and inner areas.
a^8. Fore wing with the costal fascia broad.
a^9. Fore wing with pink streak on median nervure..... *alarioides.*
b^9. Fore wing without pink streak on median nervure..... *lanceolata.*
b^8. Fore wing with the costal fascia narrow ... *cruentata.*
b^7. Fore wing without well-defined pink fasciæ on costal and inner areas.
a^8. Fore wing with red streaks above median nervure and on vein 6 ..... *rubristria.*
b^8. Fore wing without red streaks.
a^9. Fore wing with white fascia in discal fold.
a^{10}. Fore wing with the ground-colour ochreous ..... *flavia.*
b^{10}. Fore wing with the ground-colour chestnut ..... *bivittata.*
c^{10}. Fore wing with the ground-colour flesh-red ..... *terracotta.*
d^{10}. Fore wing with the ground-colour rose-pink.
a^{11}. Hind wing pure white ..... *transvalica.*
b^{11}. Hind wing suffused with pink or fuscous.
a^{12}. Fore wing with the inner area not suffused with fuscous ..... *beatrix.*
b^{12}. Fore wing with the inner area suffused with fuscous ..... *radiata.*

b^9. Fore wing with yellowish fascia in discal fold.
a^{10}. Fore wing with the inner area suffused with fuscous.
a^{11}. Fore wing with the cilia dark at tips . *flavistrigata.*
b^{11}. Fore wing with the cilia wholly pink . *metaphœa.*
c^{11}. Fore wing with the cilia white-tipped, except at apex and towards tornus ... *tosta.*
d^{11}. Fore wing with the cilia wholly white-tipped ..... *albicilia.*
b^{10}. Fore wing with the inner area not suffused with fuscous.
a^{11}. Fore wing bright yellow, largely suffused with pink ..... *flavocarnea.*
b^{11}. Fore wing ochreous, with slight traces of pink suffusion ..... *modesta.*
c^9. Fore wing without fascia in discal fold.
a^{10}. Fore wing ochreous.
a^{11}. Fore wing with medial line angled in cell ..... *feildi.*
b^{11}. Fore wing without medial line ..... *artaxoides.*
b^{10}. Fore wing white.
a^{11}. Head orange-yellow ..... *flaviceps.*
b^{11}. Head white tinged with brown ..... *hololeuca.*

*170. Timora metarhoda. (Plate LVIII. fig. 31.)

Timora metarhoda, Druce, A. M. N. H. (7) xi. p. 201 (1903).

♀. Head and thorax olive-yellow; antennæ, head between their bases, tibiæ, and tarsi tinged with red; abdomen ochreous, slightly tinged with red. Fore wing greenish yellow; costal edge white; pale pink fasciæ, confluent at base, on median nervure and in submedian fold to origin of vein 2, with white points on their extremities representing the antemedial line; a pink discoidal spot; an oblique pink fascia from apex to vein 1 beyond middle, excurved between veins 6 and 4 and with white points on it on veins 6 to 1; a waved pink terminal line; cilia pink. Hind wing pink, pale towards base; cilia ochreous, pinkish at base. Underside of fore wing suffused with pink except costal and terminal areas; hind wing with slight discoidal spot and diffused subterminal pink patches.

Hab. Gambia (*Sir A. Moloney*), type † ♀ in Coll. Druce. *Exp.* 26 millim.

171. Timora decorata. (Plate LVII. fig. 23.)

Pradatta decorata, Moore, P. Z. S. 1881, p. 365; Butl. Ill. Het. B. M. vii. p. 68, pl. 130. f. 11; Hmpsn. Moths Ind. ii. p. 177.

Pale straw-yellow; a bar above frons, antennæ, and the greater part of legs pink. Fore wing with a pink fascia in cell conjoined at base to a fascia in submedian interspace extending to termen; antemedial white points on median nervure and vein 1; an oblique pink band from apex to vein 1, with a series of white points on it on veins 6 to 1; cilia pink. Hind wing rarely with faint traces of a postmedial pink band.

Hab. Kashmir, Saidabad, 1 ♂ type; Punjab, Dharmsála (*Hocking*), 1 ♂, Manpuri, 2 ♂, 1 ♀, Allahabad, 1 ♂; Calcutta, 1 ♀; Deccan, 1 ♀; Madras, Bellary (*Cardew*), 2 ♀; Burma, 1 ♂. *Exp.* 22 millim.

172. Timora leucosticta. (Plate LVII. fig. 24.)

Timora leucosticta, Hmpsn. Ann. S. Afr. Mus. ii. p. 256 (1902).

♂. Pale ochreous; a pink patch on prothorax; legs mostly pink. Fore wing with rather irregular diffused pink fascia below costa; antemedial white points on the pink fascia on median nervure and on a pink patch on vein 1; an oblique pink band from apex to inner margin beyond middle, interrupted at discal and submedian folds and with white points on veins 6 to 1; cilia pink. Hind wing with the cilia pink at apex. Underside of fore wing with the disk suffused with pink.

Hab. N'Gamiland (*Lugard*), 1 ♂ type. *Exp.* 26 millim.

*173. Timora albiseriata. (Plate LVIII. fig. 30.)

Timora albiseriata, Druce, A. M. N. H. (7) xi. p. 200 (1903).

Head and thorax pale ochreous, the antennæ, head between their bases, tibiæ, and tarsi tinged with pink; abdomen brownish ochreous. Fore wing pale ochreous, the costal edge white; a pink fascia on median nervure to obliquely-placed white points on median nervure and vein 1 where it expands in a patch extending to vein 1 connected by a streak in submedian fold with the postmedial band, also confluent with a fascia in end of cell extending to the discoidal spot; an oblique irregularly-diffused band from apex to inner margin near tornus, excurved between veins 6 and 4 and with a series of white points on its inner side on veins 6 to 1; a terminal series of pink points; cilia pink. Hind wing pale ochreous.

Hab. Gambia (*Sir A. Moloney*), type † ♂, ♀ in Coll. Druce. *Exp.* 20 millim.

174. Timora sinuata. (Plate LVII. fig. 25.)

Sophaga sinuata, Moore, P. Z. S. 1881, p. 363; Hmpsn. Moths Ind. ii. p. 178.

Head and thorax ochreous-brown; abdomen ochreous. Fore wing golden yellow, largely suffused with red-brown; an indistinct rufous antemedial line angled outwards below cell and inwards on median nervure and vein 1; a slight discoidal lunule; a dentate postmedial line bent outwards below costa, excurved to vein 4, then oblique; a terminal series of black points. Hind wing pale yellow, more or less suffused with fuscous and with traces of discoidal dark points and curved postmedial line. Underside of fore wing with the disk suffused with fuscous.

Hab. Bombay (*Leith*), 3 ♂, 1 ♀ type. *Exp.* 34 millim.

175. Timora aureola. (Plate LVII. fig. 26.)

Leucania aureola, Wlk. ix. 108 (1856); Hmpsn. Moths Ind. ii. p. 179.
Dorika curta, Swinh. Trans. Ent. Soc. 1891, p. 146.

Head and thorax reddish brown; abdomen ochreous. Fore

wing pale golden yellow, more or less completely suffused with flesh-pink; a diffused fuscous fascia on median nervure and vein 4 to near termen; a pale fascia in discal fold from middle of cell to termen, with a blackish fascia above it from termen towards upper angle of cell; traces of a curved postmedial series of black points on the veins sometimes present; a terminal series of black points. Hind wing whitish, very slightly tinged with brown and with some black points on termen.

Hab. Bombay, Poona (*Swinhoe*), 1 ♀ type *curta*, Mhow (*Swinhoe*), 5 ♂; Madras, Canara (*Wise*), 1 ♀ type, Belgaum (*Watson*), 1 ♂. *Exp.* 30–36 millim.

*176. Timora senegalensis.

Nonagria senegalensis, Guen. Noct. i. p. 110 (1852).

Pale ochreous; thorax tinged with brown in front; abdomen white. Fore wing irrorated sparsely with pink; a black fascia on median nervure extending to termen, towards which it is dilated, bisected throughout by a narrow white fascia with a pink fascia above it in the cell; traces of a postmedial series of black points; a terminal series. Hind wing white, with some minute black points on termen.

Hab. Senegal. *Exp.*, ♂ 27, ♀ 30 millim. This species is unknown to me.

177. Timora nubila, n. sp. (Plate LVII. fig. 27.)

♀. Head and thorax pale ochreous, slightly mixed with rufous; abdomen ochreous. Fore wing golden yellow, irrorated with a few red scales and with patches of brown scales; the ground-colour of costal area, and patches beyond lower angle of cell and on termen below apex, greyish; a terminal series of dark points. Hind wing pale yellow. Underside yellow; fore wing with the costal area suffused with brown.

Hab. Nigeria, Akassa (*Lugard*), 1 ♀ type. *Exp.* 32 millim.

178. Timora sanguinolenta. (Plate LVII. fig. 28.)

Dorika sanguinolenta, Moore, P. Z. S. 1881, p. 363; Hmpsn. Moths Ind. ii. p. 178.

♀. Head and thorax yellow tinged with rufous; abdomen ochreous. Fore wing golden yellow; the costal edge whitish; the costal area fiery red, emitting a streak on vein 6; a fiery-red fascia on median nervure, dividing beyond the cell into more or less developed streaks on veins 2, 3, 4; a diffused streak on vein 1; a more or less developed postmedial series of black points, bent outwards below costa, excurved to vein 4, then oblique; cilia yellow tinged with red. Hind wing yellowish white. Underside whitish, with the costal area of both wings and median nervure of fore wing suffused with red.

Hab. Bombay (*Leith*), 2 ♀ type. *Exp.* 30 millim.

Subsp. *ignea*, Hmpsn. Ill. Het. B. M. viii. p. 70, pl. 144. f. 21 (1891).

Frons and tegulæ black-brown; fore wing with some diffused black on subcostal and median nervures and vein 1 and an oblique streak below apex.

Hab. Madras, Wynád (*Cardew*), 1 ♀, Nilgiris (*Hampson*), 1 ♂, 1 ♀ type, Travancore, Pirmád (*Fergusson*), 1 ♂.

179. Timora uncta. (Plate LVII. fig. 29.)

Adisura uncta, Swinh. P. Z. S. 1885, p. 449, pl. 27. f. 12; Hmpsn. Moths Ind. ii. p. 179.

♂. Head and thorax brownish ochreous; abdomen ochreous. Fore wing golden yellow; the inner area suffused with reddish brown; the costal area tinged with pink; a curved postmedial series of short dark streaks on the veins; cilia pink, whitish at tips. Hind wing ochreous, suffused with brown except towards costa. Underside ochreous; fore wing suffused with fuscous except marginal areas.

Hab. Bombay (*Swinhoe*), 2 ♂ type. *Exp.* 26 millim.

180. Timora irrorata. (Plate LVII. fig. 30.)

Masalia irrorata, Moore, P. Z. S. 1881, p. 364; Hmpsn. Moths Ind. ii. p. 179.
Arsiloncha roseana, Swinh. Trans. Ent. Soc. 1890, p. 220, pl. vi. f. 17.

♀. Head and thorax yellowish brown (abdomen wanting). Fore wing yellowish white tinged with pink, and rather thickly irrorated with black-brown; a curved postmedial series of black points on the veins; cilia whitish, pale at base. Hind wing white, slightly tinged with yellow.

Hab. Sikhim, 1 ♀ type; Burma, Bhamo, 1 ♀ type *roseana*. *Exp.* 34–38 millim.

181. Timora bimaculata. (Plate LVII. fig. 31.)

Pradatta bimaculata, Moore, P. Z. S. 1888, p. 411; Butl. Ill. Het. vii. p. 67, pl. 129. f. 12; Hmpsn. Moths Ind. ii. p. 179.
Pradatta pallescens, Hmpsn. Ill. Het. viii. p. 70, pl. 144. f. 5 (1891).
Pradatta pulverulenta, Hmpsn. Ill. Het. viii. p. 71, pl. 144. f. 11 (1891).

Pale brownish ochreous; fore legs tinged with fuscous; anal tuft more rufous. Fore wing sparsely irrorated with large black scales and with diffused pinkish streaks on the veins; a black point at upper angle of cell; more or less prominent diffused fuscous streaks above median nervure and vein 4 and above vein 1. Hind wing ochreous white.

Ab. 1. *pulverulenta*. Fore wing with prominent black fascia above median nervure.

Hab. Abyssinia, 1 ♂; Br. E. Africa (*Betton*), 1 ♂; N.W. Himalayas, Kulu, Sultanpore (*G. Young*), 1 ♀, Kangra Valley (*Dudgeon*), 1 ♂, Dharmsála (*Hocking*), 1 ♂ type; Bombay, Mhow (*Swinhoe*), 1 ♀; Nilgiris (*Hampson*), 6 ♂, types *pullescens* and *pulverulenta*. *Exp.* 24 millim.

182. **Timora nigrifasciata**, n. sp. (Plate LVII. fig. 32.)

Head and tegulæ dull brown; thorax pale pinkish; abdomen ochreous white, the anal tuft fulvous. Fore wing pale purplish pink, with pale ochreous fasciæ below the cell in discal fold from before middle to termen, and as streaks above veins 2 to 7; a black fascia on median nervure and vein 4 to near termen; a black point at upper angle of cell, and a slight streak on base of vein 1. Hind wing pale straw-yellow, with slight black streak on median nervure. Underside of fore wing largely suffused with fuscous, the costal area pink.

Hab. Br. E. Africa, Eb Urru (*Betton*), 4 ♂, 4 ♀ type. *Exp.* 34 millim.

183. **Timora trifasciata**, n. sp. (Plate LVIII. fig. 1.)

♀. Head and thorax red-brown, the latter whitish behind; antennæ and abdomen whitish. Fore wing ochreous white, the costal area and the inner area except at base flesh-pink; a black fascia on median nervure and vein 4 to near termen; a diffused black fascia above vein 1 extending to below it towards tornus; a black streak on vein 6, and three short streaks below apex towards termen; a whiter fascia in discal fold from middle of cell to termen. Hind wing white, suffused with fuscous except towards base, the white extending in discal fold to beyond the cell; cilia white. Underside of fore wing fuscous with the costa red.

Hab. Br. E. Africa, Stony R. (*Crawshay*), 1 ♀ type. *Exp.* 32 millim.

184. **Timora nigristriata**, n. sp. (Plate LVIII. fig. 2.)

♂. Head and thorax pale dull brown; antennæ and abdomen whitish. Fore wing pale rose-pink; a black streak on median nervure extending to just beyond the cell; a broad yellowish-white fascia below the cell extending beyond the cell to vein 4; a yellowish-white streak in discal fold from middle of cell to termen, and slight streaks above veins 6 and 7. Hind wing whitish, the terminal half tinged with fuscous brown. Underside of fore wing suffused with fuscous.

Hab. Madras, Belgaum (*Watson*), 1 ♂ type. *Exp.* 30 millim.

185. **Timora fissifascia**, n. sp. (Plate LVIII. fig. 3.)

♂. Head and tegulæ brownish red; antennæ whitish; thorax and abdomen whitish tinged with brown, the anal tuft fulvous. Fore wing vinous-red; the costal area pinkish; a white streak on median nervure defined on each side by fuscous, emitting a very short streak on vein 2 and streaks nearly to termen on veins 3 and 4; a slight white streak on vein 1, with fuscous suffusion on each side of it; a streak on vein 6 and short streak on terminal part of vein 7 defined by fuscous. Hind wing yellowish-white, suffused with fuscous towards termen. Underside of fore wing fuscous, the costal area red.

Hab. Br. E. Africa, Kibauni (*Crawshay*), 1 ♂ type. *Exp.* 28 millim.

186. Timora flavirosea, n. sp. (Plate LVIII. fig. 4.)

♂. Head and front part of thorax purplish pink; antennæ whitish; hind part of thorax pale yellow; pectus and legs white and pink; abdomen yellowish white. Fore wing purplish pink; the costal edge and inner margin pale yellow; a pale dull-yellow fascia from base of inner margin in submedian interspace to vein 2 below end of cell; white points in end of cell and on discocellulars; fine white streaks on the veins of terminal area Hind wing white, very slightly tinged with yellow, especially on inner area. Underside of fore wing fuscous, the costal and terminal areas pink, a white point on discocellulars.

Hab. Br. E. Africa, Machakos (*Crawshay*), 1 ♂ type; Arthi R. (*Betton*), 1 ♂. *Exp.* 36 millim.

187. Timora disticta. (Plate LVIII. fig. 5.)

Timora disticta, Hmpsn. Ann. S. Afr. Mus. ii. p. 441 (1902).

♂. Head and front half of thorax bright pink; palpi, frons, and hinder half of thorax ochreous; pectus and legs whitish, the latter striped with pink above; abdomen ochreous. Fore wing pale ochreous; the costal area, extending to middle of cell, bright pink, leaving the costa ochreous; a diffused orange-yellow fascia below the cell from base to middle of wings; the inner margin orange-yellow; a pink fascia on vein 1 from before middle to termen, the area above it and cell slightly suffused with fuscous; white points at middle of cell and on discocellulars; the veins beyond the cell slightly streaked with white; cilia bright pink. Hind wing white.

Hab. Basutoland, Masite (*Weigall*), 1 ♂ type. *Exp.* 34 millim.

188. Timora alarioides. (Plate LVIII. fig. 6.)

Leucania alarioides, Butl. Trans. Ent. Soc. 1886, p. 392.

♂. Head pale rufous; thorax pale brown mixed with white; abdomen white, dorsally tinged with ochreous. Fore wing silvery white; the costal area, the median nervure, and interspace between veins 4, 5, and inner area suffused with pale pink, leaving slight white streaks in the interspaces towards apex, the median nervure and vein 6 sometimes with darker streaks. Hind wing white, with slight pink or more prominent diffused fuscous streaks on the veins. Underside of fore wing suffused with fuscous, the costal area pink, the inner area and interspace above vein 5 white.

Hab. Queensland, Peak Downs, 1 ♂ type, Gayndah, 1 ♂. *Exp.* 30 millim.

189. Timora lanceolata.

Alaria lanceolata, Wlk. xxxiii. 767 (1865).
Adisura splendens, Druce, P. Z. S. 1887, p. 685.
Adisura imitata, Druce, Biol. Centr.-Am., Het. i. p. 301, pl. 28. f. 6 (1889).
Curubasa depicta, Swinh. Trans. Ent. Soc. 1891, p. 146, pl. 8. f. 4.

Head and tegulæ red-brown, sometimes mixed with pink;

thorax purplish pink; legs suffused with pink; abdomen white, more or less tinged with brown. Fore wing silvery white, often tinged with golden yellow towards base or wholly golden yellow;

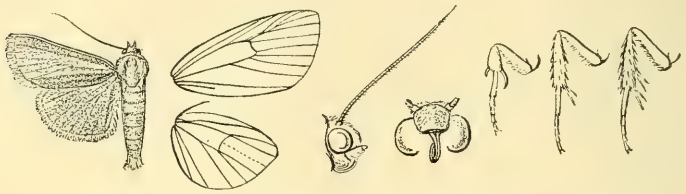


Fig. 36.—*Timora lanceolata*, ♂. (From Moths Ind. vol. ii.)

the costal area purplish pink suffused with grey, the costal edge white; the inner area purplish pink, often leaving more or less yellow or white on inner margin; cilia pink at tips or wholly pink. Hind wing white, often more or less suffused with fuscous, or wholly fuscous, with the cilia pink. Underside of fore wing more or less suffused with fuscous.

Hab. Costa Rica (*van Patten*), 1 ♂ type *imitata*, Godman-Salvin Coll.; Nigeria, Borgu, Yelwa L. (*Migeod*), 2 ♂, 1 ♀; Br. E. Africa, Machakos (*Crawshay*), 3 ♂, Kibauni (*Crawshay*), 3 ♂, Arthi R. (*Betton*), 1 ♂, Eb Urru (*Betton*), 1 ♂, 1 ♀, Matuba (*Betton*), 3 ♂, Kakessa (*Betton*), 2 ♂; Mashonaland, Salisbury (*Marshall*), 1 ♂, 1 ♀; Natal, Malvern (*Marshall*), 1 ♂; C. Colony, Table Mt., 1 ♂; Bombay, 1 ♂, Mhow (*Swinhoe*), 2 ♂, Khandalla (*Swinhoe*), 1 ♀ type *depicta*; Madras, Belgaum (*Watson*), 1 ♀, Wynâd (*Cardew*), 2 ♂, Nilgiris, 1 ♀, Coimbatore (*Walhouse*), 1 ♂ type. *Exp.* 22–32 millim.

190. Timora cruentata. (Plate LVIII. fig. 7.)

Curubasa cruentata, Moore, P. Z. S. 1881, p. 367; Butl. Ill. Het. vii. p. 68, pl. 130. f. 9; Hmpsn. Moths Ind. ii. p. 177.
Curubasa marginata, Moore, P. Z. S. 1881, p. 367.

Head and tegulæ ochreous tinged with brown; antennæ whitish; thorax whitish, slightly tinged with pink: abdomen ochreous. Fore wing straw-yellow; the costal and inner areas purplish pink, the inner area more or less strongly suffused with fuscous; cilia often pink or tinged with pink at tips. Hind wing straw-yellow, often more or less tinged with fuscous. Underside of fore wing often suffused with fuscous towards base.

Hab. Punjab, Sultanpur (*G. Young*), 2 ♀, Kala Pani (*Yerbury*), 1 ♂, Simla (*Harford*), 2 ♂, Dharmsála (*Hocking*), 6 ♂, 2 ♀, type and type *marginata*. *Exp.* 26–30 millim.

191. Timora rubristria, n. sp. (Plate LVIII. fig. 8.)

♂. Head and thorax yellowish brown, the latter pale behind; palpi and legs tinged with pink; abdomen ochreous. Fore wing

whitish, with diffused yellow-brown streaks on costal area and veins; a red streak on each side of median nervure, beyond the cell bifurcating into streaks on veins 4 and 5, each bifurcating towards termen; a streak on vein 6 bifurcating towards termen. Hind wing white, the veins, costal, and inner areas tinged with yellow-brown. Underside of fore wing with the costal area tinged with red.

Hab. Nigeria, Asaba (*Crosse*), 1 ♂ type. *Exp.* 24 millim.

192. **Timora flavia**, n. sp. (Plate LVIII. fig. 9.)

Head and thorax ochreous tinged with brown; abdomen ochreous. Fore wing ochreous; the subcostal and median nervures and nervules streaked with pink; a white fascia in discal fold from middle of cell to near termen, with a slight fuscous streak below it on vein 5. Hind wing ochreous white. Underside of fore wing with diffused fuscous streaks on the veins.

Hab. Bombay, Mhow (*Swinhoe*), 1 ♂, 1 ♀; Deccan, 1 ♂; Madras, Belgaum (*Watson*), 1 ♂, 1 ♀ type, Wynâd (*Cardew*), 1 ♂. *Exp.* ♂ 24, ♀ 26 millim.

193. **Timora bivittata**. (Plate LVIII. fig. 10.)

Leucania bivittata, Wlk. ix. 108 (1856); Hmpsn. Moths Ind. ii. p. 177.

Head and thorax bright chestnut; antennæ whitish; abdomen whitish. Fore wing bright chestnut; a silvery-white fascia in submedian interspace, attenuate at extremities, defined on each side by black, and with black streak on it towards termen; a silvery-white fascia defined by black in discal fold from before middle to termen, attenuate at extremities; black-defined white streaks on terminal area on veins 2, 3, 4, 6. Hind wing pure white. Underside white, the costal area of both wings and the median nervure of fore wing suffused with rufous.

Hab. Punjab, Kangra Valley (*Dudgeon*), 1 ♀; Bombay, Mhow (*Swinhoe*); Burma, Moulmein (*Clerck*), 1 ♀ type, Up. Burma, Byingui (*Bingham*), 1 ♂. *Exp.* 32–36 millim.

194. **Timora terracotta**. (Plate LVIII. fig. 11.)

Masalia terracotta, Hmpsn. Ill. Het. B. M. viii. p. 71, pl. 144. f. 22 (1891); id. Moths Ind. ii. p. 178.

Head and thorax dull brown, the metathorax pinkish; abdomen ochreous. Fore wing deep flesh-red; a yellowish streak in basal half of submedian fold; a white fascia in discal fold from middle of cell to termen, defined above and below by fuscous streaks; the veins of terminal area slightly streaked with white. Hind wing white, tinged with fuscous except towards base, and in female slightly with pink. Underside of fore wing fuscous, the marginal areas pinkish.

Hab. Nilgiris (*Hampson*), 1 ♂, 2 ♀ type; Travancore, Pirmâd (*Fergusson*), 1 ♂. *Exp.* 30 millim.

*195. Timora transvalica. (Plate LVIII. fig. 12.)

Timora transvalica, Dist. Entom. 1902, p. 212.

♂. Head brownish tinged with pink; thorax pink, the tegulæ brownish at base; abdomen yellowish white. Fore wing rose-pink; the veins streaked with brownish; a white fascia in submedian fold from base to near termen, pointed at extremities; a similar fascia from middle of cell to termen; fine white streaks in interspaces of terminal area. Hind wing white.

Hab. Transvaal, Johannesburg, type † ♂ in Coll. Distant. *Exp.* 32 millim.

196. Timora beatrix. (Plate LVIII. fig. 13.)

Pradatta beatrix, Moore, P. Z. S. 1881, p. 365; Swinh. P. Z. S. 1886, p. 442, pl. 41. f. 5; Hmpsn. Moths Ind. ii. p. 178.
Masalia rosacea, Hmpsn. Ill. Het. B. M. viii. p. 71, pl. 144. f. 23 (1891).

Head and tegulæ brownish; antennæ ochreous white; thorax pinkish; abdomen ochreous white. Fore wing pink; a yellowish-white streak in submedian interspace to beyond middle, and another in discal fold from before middle to termen; the veins and interspaces of terminal area with fine white streaks. Hind wing white tinged with pink, especially towards termen.

Ab. 1. *rosacea*. Abdomen and hind wing suffused with fuscous; the underside of fore wing suffused with fuscous except marginal areas.

Hab. N.W. Himalayas, Dharmsála (*Hocking*), 4 ♂, 2 ♀ type, Abbottabad (*Yerbury*), 1 ♂; Bombay, Canara (*Ward*), 1 ♂; Cuddapah (*Campbell*), 1 ♂; Nilgiris (*Hampson*), 7 ♂, type *rosacea*. *Exp.* 28–32 millim.

197. Timora radiata. (Plate LVIII. fig. 14.)

Masalia radiata, Moore, P. Z. S. 1881, p. 364; Hmpsn. Moths Ind. ii. p. 178.

♂. Head and thorax pale brownish tinged with pink; abdomen ochreous suffused with brown, the ventral surface whitish. Fore wing dull pink, the inner half suffused with brown; the costal edge whitish; a white fascia through the cell to termen, attenuate at extremities; a white fascia in basal half of submedian fold; the veins of terminal area streaked with white; cilia whitish and pink. Hind wing fuscous brown, the cilia mixed with white. Underside of fore wing with the ground-colour fuscous.

Hab. Punjab, Manpuri, 1 ♂ type. *Exp.* 24 millim.

198. Timora flavistrigata, n. sp. (Plate LVIII. fig. 15.)

♂. Head brownish; antennæ white; thorax white mixed with pink; abdomen pale ochreous. Fore wing flesh-red, suffused with pink at base, and with fuscous on inner area or on all except costal and terminal areas; the costal edge yellowish; a pale yellow fascia

from middle of cell to termen and slight streaks above veins 6, 7. Hind wing pale yellow.

Hab. Br. E. Africa, Machakos (*Crawshay*), 2 ♂, Kikuyu, Nairobi Plains (*Crawshay*), 1 ♂ type. *Exp.* 26–30 millim.

199. **Timora metaphæa**, n. sp. (Plate LVIII. fig. 16.)

♀. Head and thorax dull brown, the last tinged with pink; abdomen ochreous, dorsally tinged with fuscous. Fore wing purplish pink; the inner area suffused with fuscous; traces of a pale fascia in discal fold from middle of cell to near termen. Hind wing fuscous brown, the termen pinkish; the cilia pink at base, whitish at tips. Underside of fore wing fuscous except marginal areas, which are ochreous tinged with pink.

Hab. Beloochistan, 1 ♂; N.W. Himalayas, Mandi (*G. Young*), 1 ♀ type. *Exp.* 28–30 millim.

200. **Timora tosta.** (Plate LVIII. fig. 17.)

Masalia tosta, Moore, P. Z. S. 1888, p. 411; Butl. Ill. Het. B. M. vii. p. 67, pl. 130. f. 7; Hmpsn. Moths Ind. ii. p. 178.

Head and thorax pale yellow-brown, the metathorax and legs tinged with pink; abdomen ochreous white. Fore wing with the apex somewhat produced and acute; pink thickly irrorated with darker red; the costal edge pale; traces of a pale fascia below base of cell; a pale fascia in discal fold from middle of cell to towards termen, narrowing to a point at extremities; a terminal series of slight dark points; cilia white-tipped, except at apex and towards tornus. Hind wing yellowish white, the median nervules and termen in female slightly suffused with pink. Underside of both wings pale ochreous, the costa and termen tinged with red.

Hab. N.W. Himalayas, Kulu, Sultanpur (*G. Young*), 4 ♂, Dharmsála (*Hocking*), 1 ♀ type. *Exp.* 34 millim.

201. **Timora albicilia**, n. sp. (Plate LVIII. fig. 18.)

♂. Head and thorax dull brown, the latter tinged with pink; abdomen ochreous, dorsally tinged with fuscous. Fore wing ochreous, the costal area, except costal edge, median nervure and nervules and vein 1 with diffused pink streaks; the inner margin suffused with fuscous; the terminal area suffused with pink; cilia pink at base, white at tips. Hind wing ochreous, suffused with fuscous, the cilia ochreous. Underside of fore wing fuscous, the marginal areas ochreous.

Hab. Sikhim (*Dudgeon*), 1 ♂ type. *Exp.* 26 millim.

202. **Timora flavocarnea**, n. sp. (Plate LVIII. fig. 19.)

♀. Head and thorax brownish ochreous; abdomen ochreous. Fore wing golden yellow; the costal edge whitish; the costal area and vein 1 with broad pale pink and whitish fasciæ, the median

nervure and nervules streaked with pale pink and white; cilia tinged with pink. Hind wing yellowish white, with some fuscous suffusion beyond and below end of cell. Underside yellowish white. Fore wing suffused with fuscous except marginal areas.

Hab. Abyssinia, 1 ♀ type. *Exp.* 34 millim.

203. Timora modesta. (Plate LVIII. fig. 20.)

Pradatta modesta, Moore, P. Z. S. 1881, p. 366; Hmpsn. Moths Ind. ii. p. 179.
Curubasa calamaria; Moore, P. Z. S. 1881, p. 367.

♀. Pale brownish ochreous. Fore wing with slightly paler fasciæ in discal and submedian folds. Hind wing paler.

♂. Head and tegulæ browner; legs tinged with fuscous. Fore wing sometimes with slight pink tinge on costal and inner areas.

Hab. Punjab, Manpuri, 1 ♀ type, Jubbulpore, 2 ♂; Bombay, 1 ♂, type *calamaria*. *Exp.* 24–30 millim.

*204. Timora feildi.

Heliothis feildi, Ersch. Lep. Turk. p. 49, pl. 3. f. 45 (1874); Staud. Cat. Lep. pal. p. 222.

♂. Head and thorax ochreous white slightly tinged with olive-green; abdomen ochreous. Fore wing pale ochreous; the basal area very slightly tinged with olive; a medial olive line diffused on outer side oblique from costa to near lower angle of cell, where it is sharply angled outward, then strongly incurved; traces of a subterminal line angled outwards at vein 7 and slightly excurved at middle; cilia with fuscous line through them, the tips rufous. Hind wing pale ochreous; the basal area tinged with fuscous; a fuscous discoidal lunule; the terminal area fuscous, narrowing to tornus. Underside ochreous. Fore wing with fuscous discoidal spot and traces of a subterminal band.

Hab. W. Turkestan, Askhabad in Coll. Elwes, Samarkand, Bokhara. *Exp.* 38 millim.

205. Timora artaxoides. (Plate LVIII. fig. 21.)

Pradatta artaxoides, Moore, P. Z. S. 1881, p. 366; Hmpsn. Moths Ind. ii. p. 179.

Bright ochreous or pale brownish ochreous. Hind wing tinged with fuscous wholly or towards termen only, the cilia bright ochreous. Underside of fore wing suffused with fuscous except marginal areas.

Hab. N.W. Himalayas, Kashmir, 1 ♂, Kulu, Sultanpore (*G. Young*), 9 ♂, 2 ♀ type, Dalhousie (*Harford*), 1 ♀. *Exp.* 30 millim.

206. Timora flaviceps, n. sp. (Plate LVIII. fig. 22.)

Glossy white; head orange-yellow; tibia and tarsi orange-yellow, the latter ringed with fuscous; abdomen with the anal tuft tinged

with ochreous. Fore wing with the cilia at apex and tornus orange. Hind wing with the costal edge towards apex pale orange. Underside of fore wing with the costa orange.

Hab. Nigeria, Borgu, Yelwa L. (*Migeod*), 1 ♂ type. *Exp.* 24 millim.

207. **Timora hololeuca**, n. sp. (Plate LVIII. fig. 23.)

♂. Head, thorax, and abdomen white, slightly tinged with fuscous brown. Wings silvery white, the costa of fore wing slightly tinged with brown. Underside of fore wing suffused with fuscous to near termen below costa only or to the median nervure or inner margin.

Hab. Abyssinia, 1 ♂; Madras, Belgaum (*Watson*), 2 ♂ type. *Exp.* 24 millim.

Genus **HEBDOMOCHONDRA**.

	Type.
Hebdomochondra, Staud. Stett. ent. Zeit. 1879, p. 321	*syrticola*.

Proboscis fully developed; palpi porrect, hardly extending beyond the frons and slightly fringed with hair below; frons with rounded prominence with corneous plate below it; eyes large, rounded; antennæ of male ciliated; head and thorax smoothly clothed with hair and scales; fore tibiæ short and broad, with long curved claw on inner side and one spine on outer; mid and hind tibiæ spined. Fore wing rather long and narrow; veins 3 and 5 from near angle of cell; 6 from the areole, which is formed by 9 and 10 anastomosing with 7, 8; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 stalked.

208. **Hebdomochondra syrticola.**

Hebdomochondra syrticola, Staud. Stett. ent. Zeit. 1879, p. 321; id. Cat. Lep. pal. p. 223.

♂. Head and thorax pale ochreous; pectus, legs, and abdomen ochreous white. Fore wing uniform pale ochreous. Hind wing pure white.

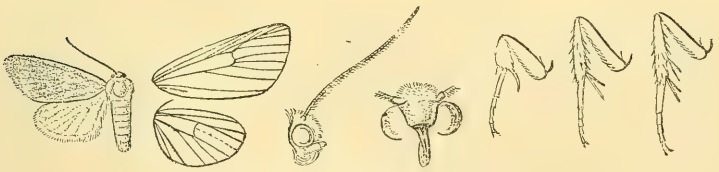


Fig. 37.—*Hebdomochondra syrticola*, ♂. ½.

Hab. S.E. Russia, 1 ♂, Zeller Coll.; W. Turkestan, Turcomania; E. Turkestan, Thian Shân Mts. *Exp.* 28 millim.

Genus COPABLEPHARON.

Type.
Copablepharon, Harv. Can. Ent. x. p. 56 (1878) ..... *absida.*

Proboscis fully developed; palpi upturned, short, fringed with hair in front; frons with somewhat obliquely rounded prominence; antennæ of male minutely serrate and fasciculate; eyes large, rounded; head and thorax smoothly clothed with hair; tibiæ strongly spined. Fore wing rather narrow, the apex produced and termen oblique; veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of disco-cellulars; 6, 7 from upper angle.

A. Fore wing ochreous, more or less tinged with brownish ..... *absida.*
B. Fore wing clear yellow-buff.
  a. Hind wing white, the terminal area tinged with ochreous ... *grandis.*
  b. Hind wing fuscous ..... *longipennis.*
C. Fore wing pure white ..... *alba.*

209. Copablepharon absida.

Ablepharon absidum, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 275 (1874); Smith, Cat. Noct. N. Am. p. 267.

Head and thorax ochreous yellow; abdomen ochreous white, tinged with yellow below. Fore wing ochreous yellow, more or less slightly tinged with brown, and the veins streaked with pale brown; pale streaks usually visible in cell and discal fold from before middle to termen and in submedian fold; a black point sometimes present at upper angle of cell and a slight streak at lower angle; the postmedial line sometimes present as an oblique sinuous

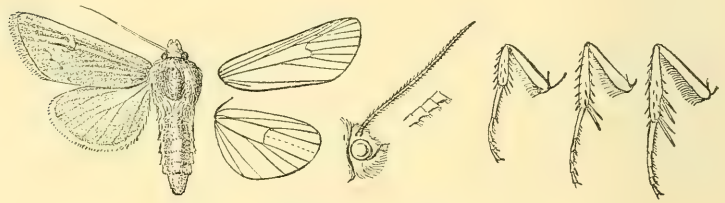


Fig. 38.—*Copablepharon absida*, ♂. ½.

interrupted line with black points on the veins, or reduced to points only, or absent. Hind wing white, tinged with fuscous brown except towards base, and with black postmedial points on median nervules. Underside white; fore wing with the cell clouded with brown.

Hab. U.S.A., Oregon, 2 ♀ type, Colorado, Montana, California, Webber L. (*Osten Sacken*), 1 ♀. *Exp.* 42 millim.

210. Copablepharon grandis. (Plate LVIII. fig. 24.)

Ædophron grandis, Streck. Lep. Rhop. & Het. p. 129 (1875).
Copablepharon subflavidens, Grote, Can. Ent. xiv. p. 169 (1882); Smith, Cat. Noct. N. Am. p. 267.

Head and thorax pale clear sulphur-yellow; pectus, legs, and

abdomen white. Fore wing pale, clear, sulphur-yellow, sometimes with oblique postmedial series of black points on the veins. Hind wing white, the terminal area very slightly tinged with ochreous; postmedial black points on median nervules.

Hab. U.S.A., Montana, Colorado (*Bruce, Cockerell*), 1 ♂, 1 ♀. *Exp.*, ♂ 44, ♀ 48 millim.

*211. **Copablepharon longipennis.** (Plate LXIX. fig. 9.)

Copablepharon longipenne, Grote, Can. Ent. xiv. p. 169 (1882); Smith, Cat. Noct. N. Am. p. 267.

Head and thorax yellow; palpi and pectus whitish. Fore wing clear pale buff-yellow; the subterminal line represented by a series of dark points. Hind wing fuscous; the cilia whitish. Underside whitish slightly tinged with fuscous.

Hab. U.S.A., Montana. *Exp.* 44 millim. This species is unknown to me, figured from a drawing from type in Brooklyn Inst. Arts & Sci.

212. **Copablepharon alba.** (Plate LVIII. fig. 25.)

Arsilonche album, Harv. Can. Ent. viii. p. 35 (1876); Smith, Cat. Noct. N. Am. p. 268.

♂. Uniform pure white.

Hab. U.S.A., Oregon, Colorado (*Bruce*), 1 ♂, Montana. *Exp.* 46 millim.

Genus **ADISURA.**

	Type.
Adisura, Moore, P. Z. S. 1881, p. 367	*atcinsoni.*

Proboscis fully developed; palpi oblique to just beyond frons and moderately scaled below; frons with rounded prominence with corneous plate below it; eyes large, rounded; antennæ of male ciliated; head and thorax smoothly clothed with hair and scales; fore tibiæ without spines; mid and hind tibiæ with a few spines; abdomen smoothly scaled. Fore wing with the apex somewhat produced and acute; veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

A. Fore wing with the ground-colour ochreous.	
a. Fore wing with the cilia wholly pink	*dulcis.*
b. Fore wing with the cilia white-tipped.	
a^1. Fore wing largely suffused with grey and irrorated with fuscous	*atcinsoni.*
b^1. Fore wing not suffused with grey or irrorated with fuscous.	
a^2. Fore wing with the costal and inner areas more or less prominently suffused with pink, the cilia pink at base.	*marginalis.*
b^2. Fore wing with the costal and inner areas not tinged with pink, the cilia ochreous at base	*straminea.*
B. Fore wing with the ground-colour green	*ærugo.*

213. **Adisura dulcis.** (Plate LVIII. fig. 26.)

Adisura dulcis, Moore, P. Z. S. 1881, p. 368; Hmpsn. Moths Ind. ii. p. 177.

♀. Head and thorax dark red-brown; pectus and legs ochreous

mixed with rufous; abdomen ochreous. Fore wing golden yellow; the costal edge white; broad deep pink fasciæ on costal and inner areas; the base of inner margin fuscous; termen and cilia pink. Hind wing ochreous, the veins and terminal area suffused with fuscous. Underside of fore wing fuscous, with ochreous streaks just beyond and below end of cell, the terminal area yellow, pink at costa.

Hab. Sikhim; Assam, Khásis, 1 ♀; Queensland, Townsville (*Dodd*), 1 ♂, 1 ♀. *Exp.* 32 millim.

214. Adisura atcinsoni.

Adisura atkinsoni, Moore, P. Z. S. 1881, p. 368, pl. 37. f. 6; Hmpsn. Moths Ind. ii. p. 173.

Head grey; thorax pale brown; pectus and legs whitish, the tibiæ and tarsi rufous above; abdomen ochreous, dorsally tinged with fuscous. Fore wing greyish, the inner and terminal areas except at apex suffused with brown, the costal area and termen with pink;

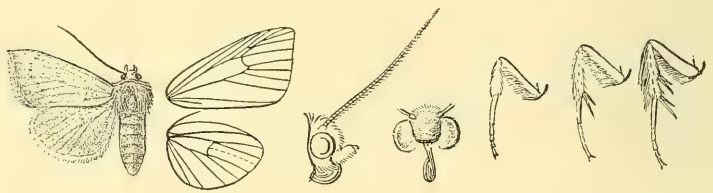


Fig. 39.—*Adisura atcinsoni*, ♂. ½.
(From Moths Ind. vol. ii.)

an oblique antemedial series of three black points on the veins and a postmedial series excurved from costa to vein 4, then oblique; traces of dusky orbicular and reniform stigmata. Hind wing ochreous yellow, with more or less black suffusion on terminal area narrowing from inner margin to apex.

Hab. N. China, Shanghai, 1 ♂; C. China, Ichang (*Mrs. Pratt*), 2 ♂; W. China, Ship-y-shan, 1 ♂; N.W. Himalayas, Simla (*Harford*), 1 ♂, Dharmsála (*Hocking*), 1 ♀; Sikhim (*Dudgeon*), 1 ♂. *Exp.* 30–34 millim.

Subsp. 1. *leucanioides*, Moore, P. Z. S. 1881, p. 368.

Fore wing without pink suffusion on costal area and termen, the latter yellowish.

Hab. Br. E. Africa, Eb Urru (*Betton*), 1 ♀; Kutch, 5 ♂, 8 ♀ type; Bombay, Mhow, 1 ♂; Madras, Gooty (*Campbell*), 1 ♀, Nilgiris (*Hampson*), 2 ♂, 3 ♀.

Subsp. 2. *pallida*, Moore, P. Z. S. 1881, p. 369; id. Lep. Ceyl. iii. p. 52, pl. 150. f. 8.

Paler and greyer.

Hab. Ceylon, 2 ♂ type.

215. **Adisura marginalis.** (Plate LVIII. fig. 27.)

Anthophila marginalis, Wlk. xii. 830 (1857); Hmpsn. Moths Ind. ii. p. 177.
Heliothis delicia, Feld. Reis. Nov. pl. 108. f. 40 (1874).
Adisura similis, Moore, P. Z. S. 1881, p. 369.

Ochreous; sides of palpi and frons, neck at sides, and fore and mid legs above rufous. Fore wing with the costal edge white; pale pink suffusion on costal and inner areas; an indistinct postmedial series of dark points curved from costa to vein 4, then oblique, sometimes obsolete; cilia pink, white at tips. Hind wing pale ochreous, the terminal area usually tinged with fuscous.

Hab. Punjab, Sultanpur (*G. Young*), 1 ♀, Cambellpur (*Yerbury*), 1 ♀, Manpuri, 1 ♀; Bengal, Sikhim, 6 ♂, 1 ♀ type, Calcutta (*Grote*), 5 ♂, 3 ♀ type *similis*; Madras, Cuddapah (*Campbell*), 1 ♂; Siam; Amboina. *Exp.* 24–30 millim.

216. **Adisura straminea.** (Plate LVIII. fig. 28.)

Adisura straminea, Hmpsn. Ann. S. Afr. Mus. ii. p. 258 (1902).

Pale straw-yellow; sides of palpi and frons, the neck behind the eyes, and upperside of fore and mid legs red-brown. Fore wing with the costal edge white; somewhat paler streaks in and beyond cell and below the cell and vein 3; indistinct dark points in and beyond upper angle of cell and a postmedial series curved from costa to vein 4, then oblique to submedian fold. Hind wing whitish, suffused with straw-colour towards termen.

Hab. N'Gamiland (*Lugard*), 1 ♂ type; Bombay, Deesa (*Nurse*), 1 ♀. *Exp.* 24 millim.

217. **Adisura ærugo.** (Plate LVIII. fig. 29.)

Thalpochares ærugo, Feld. Reis. Nov. pl. 108. f. 45 (1874).

Head, tegulæ, and outer side of patagia apple-green; palpi, frons, and antennæ brownish ochreous; upperside of patagia and thorax purplish; pectus whitish; legs ochreous mixed with brown; abdomen orange, the ventral surface whitish. Fore wing apple-green; the costa ochreous irrorated with black and with three white points towards apex; a black discoidal point; a subterminal series of white points; cilia ochreous and black. Hind wing orange, with terminal blackish band obsolescent and on apical area only in male, more prominent and extending to vein 1 in female. Underside of fore wing orange, with more or less developed diffused subterminal black band.

Hab. Mashonaland, Salisbury (*Marshall*), 2 ♂, 1 ♀; Basutoland, Masite, 1 ♂, 1 ♀, Maseru, 1 ♀ (*Crawshay*); C. Colony, Annshaw (*Miss F. Barrett*), 1 ♂, 1 ♀, Murraysburg (*Trimen*). *Exp.* 24–26 millim.

Genus **ERYTHROPHÆA.**

	Type.
Erithrophaia, Staud. Iris, iv. p. 316 (1891)	*eudoxia.*

Proboscis fully developed; palpi obliquely porrect, fringed with hair below; frons smooth, rounded; antennæ of male ciliated; head and thorax smoothly clothed with hair; fore tibiæ with long curved claw on inner side and six claws on outer diminishing in length towards base. Fore wing with the apex produced and acute; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

218. Erythrophæa eudoxia.

Erythrophaia eudoxia, Staud. Iris, iv. p. 316, pl. 4. f. 9 (1891); id. Cat. Lep. pal. p. 224.

♂. Pale rather dull flesh-pink, finely irrorated with whitish; antennæ whitish; pectus and abdomen whitish. Fore wing with

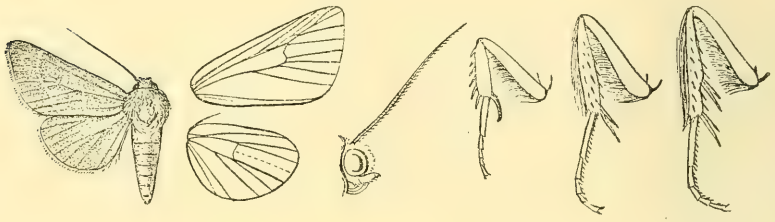


Fig. 40.—*Erythrophæa eudoxia*, ♂. ½.

pale straight oblique antemedial line; the pale postmedial line excurved from costa to vein 4, then slightly incurved. Underside whitish, tinged with pink and irrorated with dark red, both wings with traces of a diffused dark medial line.

Hab. Kashgar, Kungess, 1 ♂. *Exp.* 34 millim.

Genus **ACTINOTIA.**

	Type.
Actinotia, Hübn. Verz. p. 244 (1827)	*polyodon.*
Chloantha, Guen. Ann. Soc. Ent. Fr. viii. p. 509 (1839)	*hyperici.*

Proboscis fully developed; palpi upturned, the 2nd joint hairy in front, 3rd short, porrect, hairy below; frons smooth; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with rough hair and scales, the pro- and metathorax with spreading crests; fore tibiæ fringed with hair; mid and hind tibiæ spined; abdomen with dorsal crests and rough hair towards base. Fore wing rather short and broad; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below angle of discocellulars; 6, 7 from upper angle.

A. Hind wing with large black discoidal lunule ..... *radiosa.*
B. Hind wing without black discoidal lunule.
a. Fore wing reddish brown, with distinct white terminal ≶-mark ..... *polyodon.*
b. Fore wing grey, without distinct terminal ≶-mark.
a^1. Fore wing with the orbicular not connected with the reniform..... *hyperici.*
b^1. Fore wing with the orbicular connected inferiorly with the reniform by a curved mark .... *conjuncta.*

219. Actinotia radiosa.

Noctua radiosa, Esp. Schmett. iv. pl. 195. f. 3 (1786); Dup. Lép. Fr. vii. p. 234, pl. 115. f. 1; Staud. Cat. Lep. pal. p. 183.
Noctua lyncea, Hübn. Eur. Schmett., Noct. f. 434 (1827).

Head and thorax olive-brown mixed with grey and black, sometimes nearly all black; pectus and legs clothed with olive-white hair, the latter mixed with black; abdomen black with white segmental lines, the ventral surface whitish. Fore wing pale olive-brown, the medial area suffused with red-brown, sometimes largely suffused with black; some subbasal white streaks from cell to inner margin; an indistinct antemedial line strongly angled outwards below cell and above inner margin; orbicular obsolete; reniform narrow, with rufous or blackish centre with white line on it and white annulus; postmedial line indistinct, strongly bent outwards below costa and incurved below vein 3; subterminal line whitish, diffused towards termen as dentate marks on each side of veins, between veins 2 and 5 forming a distinct ≶-mark; a series of small dentate black spots just before termen and a fine terminal line; cilia brown intersected with white. Hind wing black, the basal and inner areas clothed with grey hair; a white patch beyond the cell more or less completely defining the large black discoidal lunule and crossed by the black veins; cilia white. Underside whitish; both wings with black discoidal spot, fascia below the cell and postmedial band emitting dentate marks towards termen on veins 3, 4 of fore wing and on hind wing diffused over terminal area on tornal half or wholly.

Hab. France, Central and Southern; Germany; Hungary, Zeller and Frey Colls.; Spain; Italy; Bulgaria (*Mrs. Nicholl*), 1 ♂, 1 ♀; Russia, Urals; Armenia; Asia Minor, Pontus. *Exp.* 28–32 millim.

220. Actinotia polyodon.

Phalæna polyodon, Clerck, Icon. pl. 2. f. 2 (1759); Staud. Cat. Lep. pal. p. 183.
Noctua perspicillaris, Linn. Faun. Suec. p. 317 (1761); Esp. Schmett. iv. pl. 134. f. 3; Hübn. Eur. Schmett., Noct. f. 249; Dup. Lép. Fr. vii. p. 149, pl. 110. f. 2.

Head and thorax red-brown; frons and vertex of head banded with grey; tegulæ grey, with two brown lines; patagia and thorax striped with grey; pectus grey at sides; legs streaked with grey

above; abdomen red-brown, paler subdorsally towards base. Fore wing red-brown, tinged with purplish pink below costa and on vein 3 towards termen; a white fascia on median nervure, on basal half with a blackish streak below it; a whitish streak on base of vein 1, with an oblique brown streak below its extremity; the subbasal and antemedial lines represented by oblique brown striæ from costa; the orbicular obsolete; the reniform narrow, with red-brown centre with white line on it and white annulus; the postmedial line represented by black points on the veins bent outwards below costa, then oblique; some pale points on costa towards apex; the subterminal line represented by an oblique fascia from apex to vein 5 emitting dentate marks to termen on each side of

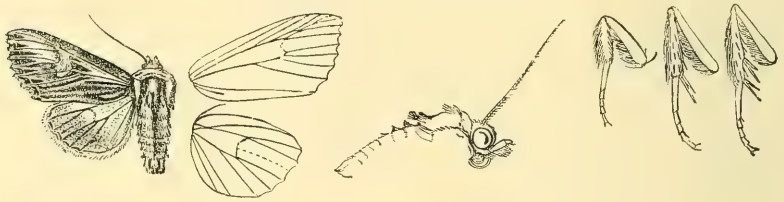


Fig. 41.—*Actinotia polyodon*, ♂. ½.

veins 6, 7, then between veins 5 and 2 by a ≶-mark; some dentate black marks before termen and a fine terminal white line; cilia with a dark brown line through them. Hind wing whitish, the inner and terminal areas suffused with brown; the veins brown; cilia white. Underside of fore wing with the apical area and termen ferruginous, with dentate white marks on each side of the veins; hind wing with discoidal point and indistinct curved postmedial line, the costal area ferruginous.

Hab. Britain; France; Germany, Zeller Coll.; Switzerland, Frey Coll.; Italy; Scandinavia; Russia, Urals; Armenia; W. Siberia, Altai; E. Turkestan; Japan, Hakodate (*Leech*), 1 ♂, 1 ♀. *Exp.* 38–40 millim.

Larva. Meyr. Brit. Lep. p. 125; Barrett, Lep. Brit. v. p. 39, pl. 189. f. 2.

Reddish brown with dark dots; dorsal line narrow, yellow; a subdorsal series of oblique brown marks; spiracular line yellow, dark-edged; head brown. Food-plant, *Hypericum*. 7, 8.

221. Actinotia hyperici.

Noctua hyperici, Schiff. Wien. Verz. p. 76 (1776); Hübn. Eur. Schmett., Noct. f. 250; Dup. Lép. Fr. vii. p. 194, pl. 112. f. 5; Herr.-Schäff. Eur. Schmett. ii. p. 289, f. 334; Staud. Cat. Lep. pal. p. 183.

Head and thorax grey mixed with black-brown; tegulæ with black medial line; patagia edged with black above; tarsi banded with black; abdomen grey irrorated with brown. Fore wing grey;

a yellowish-white streak below the cell, with a black streak below it to middle of wing; a subbasal oblique black streak above inner margin; subbasal line indistinct, angled inwards on subcostal nervure; antemedial line indistinct, angled inwards in cell and outwards below cell and above inner margin; claviform represented by a short black streak; orbicular and reniform small, with brown centres and grey annuli defined by black, the former small, elliptical, the latter constricted at middle, some black between them in cell; postmedial line indistinct, dentate, bent outwards below costa, excurved to vein 4, then oblique, and angled inwards in submedian fold; the subterminal line arising from apex, angled inwards in discal and submedian folds, defined by brown suffusion on its outer edges and crossed by short black streaks in the interspaces; cilia brown, intersected with grey. Hind wing fuscous brown, paler towards base; cilia grey, with a brown line through them; the underside grey, irrorated with brown; a slight discoidal lunule and curved postmedial line.

Hab. FRANCE; GERMANY, Zeller Coll.; SWITZERLAND, Frey Coll.; SPAIN; ITALY; SCANDINAVIA (once); BALCAN STATES; ARMENIA; ASIA MINOR; SYRIA, Leech Coll., 1 ♂; MESOPOTAMIA. *Exp.* 30–34 millim.

Larva. Boisd. Chen. pl. 22. f. 5.

Red-brown, dorsal and subdorsal lines yellowish, defined by dark brown; a broad lateral yellowish band with the black stigmata on its upper edge. Food-plant, *Hypericum perforatum*. 6.

*222. Actinotia conjuncta. (Plate LXIX. fig. 22.)

Chloantha? conjuncta, Püng. Iris, xii. p. 294, pl. 9. f. 15 (1899).

Grey. Head and thorax clothed with rather woolly hair. Fore wing irrorated with black; subbasal line represented by a striga from costa; a black streak below the cell from base to the blackish antemedial line, which is oblique, excurved below costa and angled outwards below cell and above inner margin; orbicular narrow, elliptical, oblique, defined by black; reniform narrow, whitish, its lower part connected with orbicular by a curved white mark defined by black below; traces of a medial shade; postmedial line indistinct, dentate, excurved from costa to vein 4, then oblique; subterminal line angled outwards at vein 7, dentate at veins 4 and 3, and ending in an irregular white patch above tornus, the area beyond it darker, commencing obliquely below apex and leaving the costa grey, and with a series of dark streaks in the interspaces; cilia chequered brown and grey. Hind wing whitish, suffused with brown; a slight dark discoidal lunule; whitish patches on termen at middle and tornus; cilia whitish.

Hab. TIBET, Kuku Noor, type † ♂, ♀ in Coll. Püngelev.

Genus BUCIARA.

Type.
Buciara, Wlk. Char. Undescr. Het. p. 36 (1869) ..... *bipartita.*

Proboscis fully developed; palpi upturned, the 1st and 2nd joints fringed with long hair in front, the 3rd porrect, rather long; frons smooth; antennæ of male bipectinate with moderate branches to three-fourths, the apical part simple; prothorax with spreading crest, metathorax with large crest; hind tibiæ with one spine between the spurs; abdomen with dorsal crests on 2nd and 3rd segments. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell; the inner margin with slight scale-teeth near base and towards tornus, the termen crenulate and slightly angled at vein 3. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; the termen crenulate and excised at discal fold.

223. Buciara bipartita.

Buciara bipartita, Wlk. Char. Undescr. Het. p. 36 (1869).
Actinotia acmophora, Meyr. Trans. Ent. Soc. 1897, p. 370.

♂. Head and thorax grey mixed with reddish-brown and black; palpi and frons with blackish patches; black streaks across tegulæ; patagia at extremities and metathoracic crest black; abdomen grey, dorsally tinged with fuscous brown, the crests black. Fore wing grey, irrorated with fuscous and suffused in parts with reddish brown;

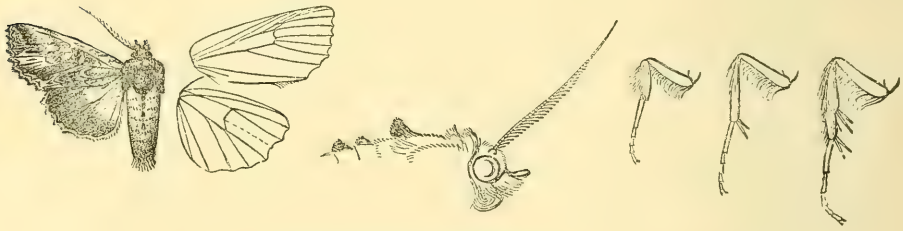


Fig. 42.—*Buciara bipartita*, ♂. ½.

the subbasal line represented by a double oblique striga from costa; the antemedial line double, strongly angled outwards below costa and cell and above inner margin and inwards on median nervure and vein 1; orbicular very narrow, oblique, with brown centre and grey annulus defined by black; reniform with indistinct grey annulus defined by black on inner side; postmedial line double at costa, then indistinct, angled outwards below costa, incurved at discal fold, somewhat dentate at median nervules, angled inwards to antemedial line in submedian fold, then prominent, double, angled outwards above vein 1 and filled in and defined on outer side by whitish; an oblique diffused dark bar from apex; the subterminal line represented by black streaks in the interspaces, longest and placed on a whitish patch at middle; an oblique dark fascia with dentate black marks on it from termen at vein 3 to angle of postmedial line above vein 1; a terminal series of slight black lunules; cilia dark brown with grey line at base. Hind wing white, the terminal half fuscous; cilia white intersected with brown. The

underside with the costal area irrorated with brown; a discoidal spot.

♀. Hind wing with the basal area suffused with brown.

Hab. N. Queensland, 1 ♀; ? Victoria, type † ♂ *acmophora* in Coll. Meyrick; ? Hab. 1 ♂ type. *Exp.* 34 millim.

Genus **OXYTRIPIA.**

Type.

Oxytripia, Staud. Cat. Lep. Eur. p. 98 (1871), non descr. ..... *orbiculosa.*

Proboscis fully developed; palpi porrect, fringed with long hair below, and hardly reaching beyond the frons, which is smooth, rounded; eyes small, reniform; antennæ of male bipectinate with short branches to apex; head and thorax clothed with scales, prothorax with slight spreading crest, the metathorax with large crest; tibiæ fringed with hair, the mid and hind tibiæ spined; abdomen clothed with rough hair and with lateral tufts of hair. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

224. Oxytripia orbiculosa.

Noctua orbiculosa, Esp. Schmett. Suppl. iv. p. 93, iii. pl. 93. f. 8 (1786); Herr.-Schäff. Eur. Schmett. ii. pp. 294, 351, pl. 13. ff. 63, 64; Friv. Jell. pl. v. f. 8; Staud. Cat. Lep. pal. p. 168.

Head and thorax fuscous brown, with a few black scales; palpi fringed with white below, tegulæ white in front, the vertex of thorax sometimes pinkish; pectus and legs white, the fore and mid tibiæ with black bands; abdomen fuscous black, with white segmental bands, the lateral and anal tufts pale rufous, the ventral surface white. Fore wing dark olive-brown, irrorated with black and tinged with purple-grey; an excurved subbasal black line from costa to vein 1, defined by white on outer side and with slight pinkish marks beyond it in and below cell and above inner margin;

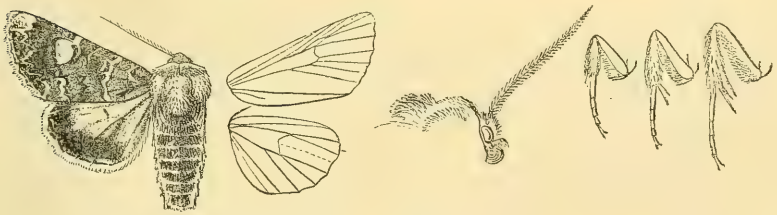


Fig. 43.—*Oxytripia orbiculosa*, ♂. ½.

the antemedial line oblique, minutely waved and defined by white on outer side; claviform small, defined by black; orbicular round, deep blue-grey with black-centred whitish annulus and defined by black; reniform large, white, rounded, its lower extremity rather produced, some blue-grey and a whitish lunule defined by black above, a black spot on its inner side and some ochreous and black on outer; a waved black line from lower angle of cell to inner margin; the postmedial line dentate, defined by grey on outer side,

bent outwards below costa, excurved to vein 4, then incurved; the subterminal line whitish, angled outwards at veins 7 and 6 and dentate to termen at veins 4, 3, 2, with some dentate black marks on its inner side from costa to vein 4, a white patch beyond it at apex, and sometimes some diffused ochreous white towards tornus; a terminal series of black points; cilia white, with some brown at base. Hind wing white with slight discoidal lunule, some black suffusion along median nervure and inner margin; a broad terminal black band occupying one-third of wing, and terminal crenulate line slightly defined by white; cilia white. Underside of fore wing mostly white except before the subterminal line; hind wing with diffused antemedial black line from costa to cell, a waved postmedial curved line, a white patch at apex, and more white on termen.

Hab. Hungary, Ofen, 2 ♂, Frey & Zeller Colls., 3 ♂, 3 ♀, Leech Coll.; W. Turkestan, Saisan; E. Turkestan, Thian Shan. *Exp.* 40–42 millim.

Genus **ISOCHLORA**.

Type.
Isochlora, Staud. Stett. ent. Zeit. 1882, p. 39 ..... *viridis*.

Proboscis fully developed; palpi short, oblique, fringed with long hair in front; frons smooth; eyes large, rounded; antennæ of male bipectinate, with moderate branches to apex; head and thorax clothed with hair only, fore tibiæ fringed with hair; mid and hind tibiæ spined; abdomen dorsally clothed with rough hair towards base and laterally fringed with hair. Fore wing with the apex somewhat produced; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

Sect. I. Antennæ of female bipectinate with short branches.

A. Hind wing fuscous, with the terminal area green ..... *maxima*.
B. Hind wing pale green .. .. *chloroptera*.

225. Isochlora maxima.

Isochlora viridis, var. *maxima*, Staud. Stett. ent. Zeit. 1888, p. 24; Alph. Rom. Mém. v. p. 161, pl. 8. f. 9; Staud. Cat. Lep. pal. p. 222.

Head and thorax bright moss-green; palpi pale brown; antennæ fulvous; legs white and green, the fore legs brown on inner side; abdomen white, tinged with green. Fore wing bright green; the costal edge white. Hind wing fuscous, the terminal area pale green, with rather irregular inner edge. Underside of fore wing suffused with fuscous except the margins; hind wing pale green, with some fuscous suffusion on inner area.

Hab. E. Turkestan, Kuldja, 2 ♂, Mongolia. *Exp.* 46–50 millim.

226. Isochlora chloroptera. (Plate LIX. fig. 13.)

Nonagria chloroptera, Hmpsn. Moths Ind. ii. p. 285 (1894).

Head and thorax emerald-green; palpi yellow-brown and white; antennæ pale fulvous; tibiæ and tarsi white, of fore legs brown on inner side; abdomen pale green, white at base and extremity.

Fore wing emerald-green, the costal edge and cilia at tips white. Hind wing white, tinged with green.

Hab. Kashmir, Deosai plains 12,000 ft. (*Leech*), 1 ♂, 1 ♀, type. *Exp.*, ♂ 50, ♀ 54 millim.

Sect. II. Antennæ of female serrate.

A. Fore wing green.
  a. Fore wing with dark postmedial line and black discoidal lunule ..... *herbacea*.
  b. Fore wing without dark postmedial line or black discoidal lunule ..... *viridis*.
B. Fore wing pale ochreous, with pink discoidal spot and fascia on inner margin ..... *grumi*.

*227. Isochlora herbacea.

Isochlora herbacea, Alph. Iris, viii. p. 195 (1895); id. Rom. Mém. ix. p. 220, pl. 13. f. 8; Staud. Cat. Lep. pal. p. 223.

♂. Head and thorax emerald-green; antennæ orange; abdomen white, slightly tinged on dorsum with fuscous. Fore wing emerald-green; a black discoidal lunule; a dusky postmedial line excurved from costa to vein 4, then oblique. Hind wing white uniformly suffused with fuscous; the cilia pure white.

Hab. Mongolia, Changhai Mts. *Exp.* 34 millim. This species is unknown to me.

228. Isochlora viridis.

Isochlora viridis, Staud. Stett. ent. Zeit. 1882, p. 39; Alph. Hor. Soc. Ent. Ross. xvii. p. 78, pl. 2. f. 51; Staud. Cat. Lep. pal. p. 222; var. *viridissima*, Staud. Stett. ent. Zeit. 1882, p. 40.
Isochlora albivitta; Alph. Hor. Soc. Ent. Ross. xxvi. p. 448 (1892); id. Rom. Mém. ix. p. 42, pl. 1. f. 3; Staud. Cat. Lep. pal. p. 223.
Nonagria fuscovirens, Hmpsn. Moths Ind. ii. p. 285 (1894).
Isochlora longivitta, Püngl. Deutsch. ent. Zeit., Lep. xlv. p. 187, pl. 3. f. 10 (1901).

Head and thorax emerald-green; palpi ochreous brown and white; antennæ pale fulvous; tibiæ and tarsi white, the inner side of fore legs brown. Fore wing emerald-green; the costal edge white; a small white discoidal lunule; cilia whitish at tips. Hind

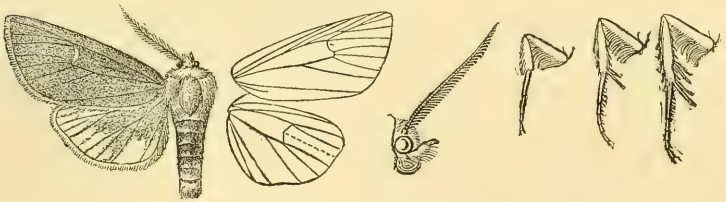


Fig. 44.—*Isochlora viridis*, ♂. ½.

wing white, the inner area suffused with fuscous except towards tornus, or the cell and area just beyond it also suffused with fuscous, leaving a white discoidal lunule; the terminal area tinged with green. Underside of fore wing fuscous except marginal areas;

hind wing tinged with green, especially towards costa; the veins brown.

Ab. 1. *albivitta*. Fore wing with a white streak in basal half of submedian fold, and sometimes also a small spot in middle of cell.

Ab. 2. *viridissima*. Fore wing without the white spot; hind wing paler.

Hab. SIBERIA; E. TURKESTAN, Kuldja, 1 ♂; TIBET, Kuku Nor; KASHMIR, Deosai plains 12,000 ft. (*Leech*), 3 ♀, type *fuscovirens*. *Exp.* 42–50 millim.

229. Isochlora grumi.

Isochlora grumi, Alph. Hor. Soc. Ent. Ross. xxvi. p. 448 (1892); id. Rom. Mém. ix. p. 42, pl. 1. f. 2; Staud. Cat. Lep. pal. p. 223.

♂. Head and thorax pale ochreous; antennæ fulvous; palpi, tibia, and tarsi pink; abdomen ochreous white, the ventral surface pink and fuscous except towards extremity. Fore wing pale ochreous; the costal edge pink; a pink fascia on inner margin from before middle to tornus, emitting slight teeth at position of ante- and postmedial lines; a spot at lower angle of cell; an oblique postmedial series of points from below apex to inner margin incurved below vein 3. Hind wing white, with some fuscous suffusion on median nervure and vein 1. Underside of fore wing with fuscous suffusion along subcostal and median nervures.

Hab. TIBET, Amdo, Kuku Nor, 1 ♂. *Exp.* 40 millim.

Genus GRUMIA.

	Type.
Grumia, Alph. Hor. Soc. Ent. Ross. xxvi. p. 453 (1892).....	*flora*.

Proboscis fully developed; palpi porrect, reaching well beyond the frons and fringed with long hair below; frons smooth, without prominence; eyes small, reniform, overhung by long cilia; antennæ of male bipectinate, with short branches; head and thorax clothed with long rough hair; all the tibiæ spined. Fore wing rather narrow; the apex rectangular; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

230. Grumia flora.

Grumia flora, Alph. Hor. Soc. Ent. Ross. xxvi. p. 453 (1892); id. Rom. Mém. ix. p. 44, pl. 1. f. 10; Staud. Cat. Lep. pal. p. 223.

♂. Head and thorax clothed with apple-green hair; pectus and

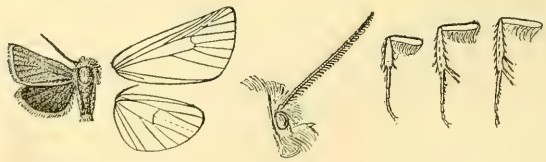


Fig. 45.—*Grumia flora*, ♂. ½.

legs clothed with white hair; abdomen black with some white hair,

the anal tuft tinged with brown, the ventral surface whitish. Fore wing apple-green; the costa, inner margin, and cilia white. Hind wing brown-black, with the cilia white. Underside black; fore wing with the costa white, with a streak of pink scales below it towards apex; hind wing with the costal half white.

Hab. Tibet, Kuku Nor, 1 ♂, Amdo. *Exp.* 24 millim.

Genus **AGROTIPHILA**.

	Type.
Agrotiphila, Grote, Ann. Lyc. Nat. Hist. N. Y. xi. p. 108 (1875)	*staudingeri.*
Schöyenia, Auriv. Ent. Tidskr. iv. p. 191 (1883)	*unifasciata.*

Proboscis fully developed; palpi upturned, short, clothed with long hair; frons smooth, rounded; eyes small, ovate; antennæ of male typically ciliated; head and thorax clothed with rough hair; tibiæ spiny. Fore wing with veins 3 and 5 from near angle of cell; 6 from just below upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle or shortly stalked.

Sect. I. (*Schöyenia*). Antennæ of male serrate and fasciculate.

A. Fore wing very narrow; the claspers of male very large ... *unifasciata.*
B. Fore wing broader; the claspers of male normal ..... *quieta.*

231. Agrotiphila unifasciata.

Amphidasis unifasciata, Ménétr. Midd. Reis. p. 59, pl. 3. f. 12 (1851).
Schöyenia arctica, Auriv. Ent. Tidskr. iv. p. 193, pl. 8. f. 45 (1883); Staud. Cat. Lep. pal. p. 219.

♂. Head, thorax, and abdomen clothed with black and olive-grey hair. Fore wing grey, mixed with black and more or less strongly irrorated with olive-yellow; some diffused black streaks on basal area; the ante- and postmedial lines minutely dentate, bounding the black-suffused medial area which is more strongly suffused below the cell, the postmedial line being excurved below costa; claviform

Fig. 46.—*Agrotiphila unifasciata*, ♂. ½.

obsolete; orbicular and reniform grey, the former minute, the latter very small; a diffused subterminal band excurved at vein 6 and middle, and with series of dark marks on it; cilia grey or whitish. Hind wing whitish, suffused and irrorated with fuscous; cilia white. Underside of both wings with slight discoidal spot and curved postmedial line.

Hab. Novaya Zembla, Waygate I. (*Feilden*), 4 ♂. *Exp.* 28 millim.

232. Agrotiphila quieta.

Noctua quicta, Hübn. Eur. Schmett., Noct. f. 485 (1827); Guen. Noct. ii. p. 193, pl. 7. f. 11; Staud. Cat. Lep. pal. p. 219; Smith, Cat. Noct. N. Am. p. 295.
Anarta schœnherri, Zett. Ins. Lap. p. 950 (1840); ab. *nigricans*, Auriv. Nord. Fjär. p. 177 (1888).
Anarta constricta, Wlk. xi. 701 (1857).
Anarta rigida, Wlk. xi. 701 (1857).

♂. Head, thorax, and abdomen black, with some grey hair tinged with olive. Fore wing grey, thickly irrorated with black-brown, the discal and submedian folds tinged with olive; a black subbasal line from costa to submedian fold; the antemedial line strong defined by whitish on inner side, angled outwards below costa, excurved below cell, angled inwards on vein 1 and outwards above inner margin; the cell black on median area, with the stigmata white, rather small, the orbicular round; the postmedial line strong, defined by whitish on outer side, dentate, bent outwards below costa, incurved at discal fold, angled outwards at vein 4, then incurved and slightly angled outwards at vein 1; the subterminal line represented by a dentate black mark below costa, two at middle and one above tornus; a terminal series of black lunules; cilia chequered black and grey. Hind wing whitish suffused with fuscous brown, leaving an indistinct pale postmedial band; cilia white, the underside whitish irrorated with fuscous, a black discoidal lunule and some suffusion on terminal area.

♀. Fore wing with the medial area darker and with a blackish fascia on it in submedian fold.

Ab. 1. *nigricans*. Much darker; fore wing suffused with black.

Hab. Norway, Finmark, 2 ♂, 2 ♀; Lapland, 1 ♂, 1 ♀; Arctic America, 2 ♂, 1 ♀, types *constricta* and *rigida*. *Exp.* 28–30 millim.

Sect. II. (*Agrotiphila*). Antennæ of male ciliated; fore wing broader.

A. Fore wing with white streak in medial part of submedian fold.
  a. Hind wing black ..... *microreas*.
  b. Hind wing whitish, the marginal area suffused with fuscous ..... *alascæ*.
B. Fore wing without white streak in submedian fold.
  a. Fore wing with the orbicular V-shaped, open above ..... *staudingeri*.
  b. Fore wing with the orbicular rounded.
    a^1. Fore wing with the ground-colour black and grey-white. *maculata*.
    b^1. Fore wing with the ground-colour olive or ochreous brown ..... *colorado*.

233. Agrotiphila microreas. (Plate LIX. fig. 14.)

Agrotis microreas, Meyr. Faun. Hawaiensis, i. p. 143 (1899).

♀. Head and thorax clothed with black and rufous hair, some white on base of antennæ and a streak on patagia; legs black and white with some rufous hair; abdomen black, the ventral surface with some ochreous hair. Fore wing black suffused with rufous; the veins black; vein 1, the median nervure, veins 3, 4, 6, and extremities of 7, 8 defined by white streaks; the orbicular and reniform black and rufous, defined by white in the cell before the

orbicular, and a quadrate ochreous spot beyond it, orbicular round; an ochreous fascia above vein 1 from before middle to end of cell, where it is bent upwards to the cell; cilia grey, with a black line at base. Hind wing black-brown; the cilia whitish at tips; the underside with the disk greyish.

Hab. Hawaii, Kilauea (*Perkins*), 1 ♀ type. *Exp.* 30 millim.

234. Agrotiphila alascæ. (Plate LIX. fig. 15.)

Agrotis alaskæ, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 84, pl. 4. f. 1 (1876); Smith, Cat. Noct. N. Am. p. 110.

♂. Head and thorax red-brown, many of the hairs tipped with grey-white; pectus with brown and grey hair; abdomen clothed with grey hair towards base, with rufous towards extremity. Fore wing grey irrorated with dark brown; a short subbasal dark-brown streak above vein 1, and a similar antemedial streak on inner margin; a whitish streak in submedian fold from before middle to just beyond the postmedial line; the antemedial line very oblique, whitish; the postmedial line bent outwards below costa, excurved to vein 3, then oblique, the area between the two lines dark brown except the costal area; the orbicular and reniform very small, whitish, the former oblique, pyriform, the latter bent inwards below on median nervure; the area just beyond the postmedial line with a slight rufous tinge; the subterminal line indistinct, whitish, angled outwards at vein 6 and excurved at middle, with a series of dentate brown marks on its inner side. Hind wing ochreous white; the marginal areas irrorated with fuscous brown; the underside with discoidal point.

Hab. Alaska, 1 ♂ type. *Exp.* 36 millim.

235. Agrotiphila staudingeri. (Plate LIX. fig. 16.)

Agrotis staudingeri, Möschl. Wien. ent. Mon. vi. p. 132, pl. 1. f. 4 (1862); Staud. Cat. Lep. pal. p. 142; Smith, Cat. Noct. N. Am. p. 110.
Agrotis montana, Morr. Ann. Lyc. Nat. Hist. N. Y. xi. p. 95 (1875).

Head and thorax dark olive-brown and pale reddish brown, with some white hair on palpi, frons, and edges of tegulæ and patagia; pectus and legs white slightly mixed with brown; abdomen clothed with fuscous and white hair. Fore wing grey-white, partly suffused

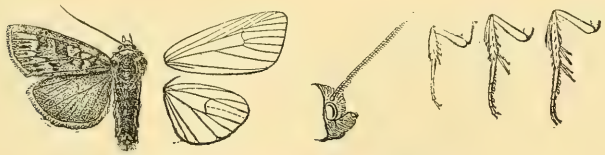


Fig. 47.—*Agrotiphila staudingeri*, ♂. ½.

with pale olive-brown and irrorated with dark brown; an oblique black subbasal line from costa to vein 1; the antemedial line slightly incurved, extending from subcostal nervure to vein 1; claviform small, whitish, defined by black on outer side; orbicular and reniform whitish defined by black, the former triangular, open above,

the latter open above and below; the postmedial line black, slightly bent outwards below costa and angled inwards in discal fold where a short black streak connects it with the reniform, below vein 3 strongly incurved; the subterminal line indistinct, whitish, minutely dentate, with a more or less complete series of dentate black marks on its inner side and the area beyond it brownish. Hind wing fuscous brown, with the cilia white; the underside grey, with a brown discoidal lunule, and the termen brownish.

Hab. Canada, Labrador; U.S.A., White Mts., Montana, Colorado, 12,000 ft., 1 ♂, New Mexico, 13,000 ft., 1 ♂ Grote Coll. *Exp.* 34 millim.

Subsp. 1. *ottonis*, Alph. Deutsch. e. Zeit., Lep. viii. p. 190 (1895); id. Rom. Mém. ix. p. 205, pl. xiii. f. 6; Staud. Cat. Lep. pal. p. 142.

Thorax and medial area of fore wing reddish brown; hind wing with curved postmedial line.

Hab. Mongolia, Urga, Uliassatai.

*236. Agrotiphila maculata.

Agrotiphila maculata, Smith, Ent. News Philad. 1893, p. 100, pl. vi. f. 7.

Black and grey-white; patagia with grey edges. Fore wing with the medial area rather darker; subbasal line strong, black, and occupying the base of wing; antemedial line strong, interrupted and obscurely angled inwards on median nervure; claviform represented by a grey spot on the blackish ground; orbicular and reniform grey, defined by the cell being filled in with black before and between them and beyond the latter, the former round; postmedial line single, dentate, excurved from costa to vein 4, then oblique and angled inwards in submedian fold; subterminal line represented by a dark spot on costa and a waved shade from vein 7 to inner margin; a terminal series of black lunules. Hind wing fuscous black.

Hab. Canada, Br. Columbia, Laggan (*Bean*). *Exp.* 31–32 millim. This species is unknown to me.

*237. Agrotiphila colorado.

Agrotiphila colorado, Smith, Trans. Am. Ent. Soc. xviii. p. 133 (1891); id. Cat. Noct. N. Am. p. 110.

Olive ochreous or ochreous brown; frons with white hair at sides; tegulæ black at middle, whitish at base and tips; patagia edged with white; abdomen black, with some fine white or yellowish hair. Fore wing with the veins streaked with white, the subbasal line single, black, defined by white on outer side; a curved black streak on base of vein 1 defined by white above; antemedial line incurved; claviform hardly traceable; orbicular and reniform large, with pale centres and white annuli defined by black, the former irregularly elliptical, the cell between the stigmata blackish, a black spur from reniform to postmedial line which is black, lunulate, defined by whitish on outer side, nearly evenly curved; subterminal

line white, diffused, interrupted below apex and preceded by a series of dentate black marks; a dark line at base of cilia. Hind wing fuscous or blackish, with the cilia white; the underside whitish, with fuscous margins and discoidal spot.

Hab. U.S.A., Colorado (*Bruce*). *Exp.* 29–31 millim. This species is unknown to me.

Genus **OROSAGROTIS**, nov.

Type, *O. rigida.*

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with long hair in front, the 3rd moderate, porrect; frons with truncate conical prominence; eyes small, elliptical; antennæ of male minutely serrate and fasciculate; head and thorax clothed with rough hair; tibiæ spined. Fore wing rather narrow, veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

A. Fore wing with the orbicular produced to a point confluent with reniform ..... *amphora.*
B. Fore wing with the orbicular not produced to a point.
a. Fore wing with the orbicular oblique, oblong, open above. *rigida.*
b. Fore wing with the orbicular small, round, entire.
a[1]. Fore wing with the lines and stigmata defined by grey. *incognita.*
b[1]. Fore wing with the lines and stigmata not defined by grey ..... *cashmirensis.*

238. **Orosagrotis amphora**, n. sp. (Plate LIX. fig. 17.)

♂. Head and thorax grey mixed with pale brown; tegulæ with medial black line; abdomen brownish grey. Fore wing grey, suffused with pale brown and slightly irrorated with fuscous; the subbasal line represented by obscure black points below costa and cell; the antemedial line indistinct, blackish, slightly angled outwards in cell and very strongly above inner margin; claviform slightly defined by black; orbicular and reniform with brown centres and whitish annuli defined by brown, the former produced to a point confluent with the reniform, the cell below it suffused with dark brown; the postmedial line minutely dentate, bent outwards below costa and oblique below vein 4; the subterminal line whitish, dentate, defined on inner side by a series of small obscure dentate dark marks; a terminal series of black points; cilia whitish with a dark line through them. Hind wing pale, suffused with fuscous brown and with a darker terminal line; the underside whitish, with small discoidal spot and curved postmedial line.

Hab. Kashmir, Digha Pass, 15,000 ft. (*McArthur*), 1 ♂ type. *Exp.* 30 millim.

239. **Orosagrotis incognita.** (Plate LIX. fig. 18.)

Agrotiphila incognita, Smith, Ent. News Philad. 1893, p. 101, pl. vi. f. 9.

♀. Head, thorax, and abdomen black-brown mixed with olive-

grey; anal tuft tinged with ochreous. Fore wing grey-brown tinged with olive, and suffused with black on base of inner and medial areas; the subbasal line represented by black spots below costa and cell; the antemedial line black, incurved from costa to vein 1 and angled outwards above inner margin; claviform elongate, defined by black; cell filled in by black defining the orbicular and reniform, which are small, grey-brown, the former round, the latter narrowing below; postmedial line bent outwards below costa, excurved to vein 3, then oblique; subterminal line represented by a series of small dentate black marks; a terminal punctiform line; cilia yellowish. Hind wing yellowish white, suffused and irrorated with brown; an indistinct discoidal spot and fine dark terminal line; cilia yellowish, brown at base.

Hab. Br. Columbia, Laggan; U.S.A., Colorado (*Bruce*), 1 ♀. *Exp.* 32 millim.

240. Orosagrotis rigida.

Agrotiphila rigida, Smith, Trans. Am. Ent. Soc. xviii. p. 134 (1891); id. Cat. Noct. N. Am. p. 110.

Head, thorax, and abdomen black-brown mixed with grey; anal tuft tinged with ochreous. Fore wing olive-brown irrorated with black; the subbasal line defined by white on outer side, waved, from costa to vein 1; the antemedial line oblique, waved, angled outwards above inner margin and defined by white on inner side; claviform outlined with black, and with a white streak from it to postmedial line; cell filled in with black defining the orbicular and reniform, which have brown centres and white annuli, the former

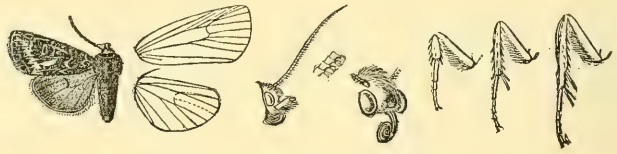


Fig. 48.—*Orosagrotis rigida*, ♂. ½.

small, round, the latter moderate; the postmedial line minutely dentate, defined by white on outer side, bent outwards below costa, excurved to vein 3, then oblique, the area beyond it suffused with grey; the subterminal line indistinct, grey, with a series of dentate black marks before it and slightly angled at veins 7 and 4; a terminal series of black points. Hind wing black-brown, with dark discoidal lunule; cilia white at tips.

Hab. U.S.A., Colorado (*Bruce*), 1 ♀, Denver. *Exp.* 28 millim.

241. Orosagrotis cashmirensis, n. sp. (Plate LIX. fig. 19.)

♂. Head and thorax black-brown mixed with some grey; abdomen fuscous brown. Fore wing pale brown, mostly suffused with black, leaving a pale fascia below costa; an indistinct curved

subbasal line from costa to submedian fold; the antemedial line slightly defined by brown on inner side, slightly waved, oblique from costa to above inner margin, where it is strongly angled; claviform defined by black; orbicular and reniform with brown centres and pale brown annuli defined by black, the former small, round, the latter narrow; the postmedial line minutely dentate, angled outwards at vein 7, then very oblique, defined on outer side by pale brown emitting streaks defining the dark veins to the subterminal line, which is pale, defined by dentate black marks on inner side, angled outwards at vein 7 and excurved at middle; a fine terminal dark line and line at base of cilia. Hind wing pale fuscous brown, the cilia white with brown line at base; the underside whitish, the costal and terminal areas suffused with brown, a slight discoidal point.

Hab. Kashmir, Kardong, 14,000 ft. (*McArthur*), 1 ♂ type. *Exp.* 30 millim.

Genus **MESEMBREUXOA**, nov.

Type, *M. chilensis*.

Proboscis rather slight; palpi with the 2nd joint oblique, extending about the length of head and fringed with long hair in front, the 3rd moderate, porrect; frons with truncate conical prominence with flat vertical corneous process at middle; eyes round; antennæ of male bipectinate with rather long branches to extremity; head and thorax clothed with rough hair and scales; tibiæ strongly spined. Fore wing with veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 stalked.

242. **Mesembreuxoa chilensis**, n. sp.

Head and thorax red-brown mixed with white; abdomen red-brown. Fore wing reddish brown, with darker irroration forming a fascia above vein 1; the subbasal line double, black, filled in with whitish from costa to vein 1; the antemedial line similar, angled outwards in cell, excurved below it and more strongly above inner

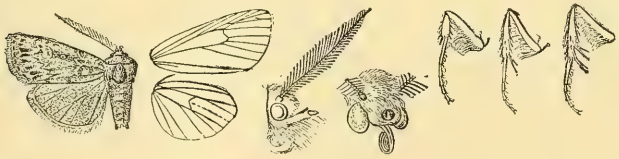


Fig. 49.—*Mesembreuxoa chilensis*, ♂. ½.

margin; orbicular and reniform small, pale, defined by black, the former round; the postmedial line irregularly dentate, defined by whitish on outer side, bent outwards below costa, incurved in discal fold and more strongly in submedian fold; the subterminal line represented by a series of pale marks with dentate black spots on

their inner sides, those on each side of vein 5 longer; a terminal series of black points. Hind wing white tinged with brown, especially towards termen: the cilia white with a brownish line at base; the underside white, with the costal area tinged with brown.

Hab. Chili, Coquimbo (*J. J. Walker*), 4 ♂, 2 ♀ type. *Exp.* 30 millim.

Genus **CLADOCEROTIS**, nov.

Type, *C. optabilis*.

Proboscis aborted, minute; palpi porrect to just beyond frons, fringed with long hair below; frons with truncate conical prominence; eyes large, round; antennæ of male bipectinate, with long branches to apex; head and thorax clothed with hair only; fore tibiæ rather short and broad, spined at sides and with long curved claw on inner side and short claw on outer; mid and hind tibiæ spined. Fore wing with the apex quadrate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

243. **Cladocerotis optabilis.**

Heliophobus optabilis, Boisd. Ic. Lep. Eur. pl. 74. ff. 2, 3 (1832); Herr.-Schäff. Eur. Schmett., Noct. ff. 31–33; Dup. Lép. Fr. Suppl. iii. p. 170, pl. 16. f. 2; Staud. Cat. Lep. pal. p. 176.

Head and thorax ochreous tinged with red-brown; sides of palpi and frons blackish; abdomen ochreous, tinged with brown in female. Fore wing ochreous, suffused with reddish-brown except below costa and on inner margin; the veins defined by ochreous streaks; the lines absent; claviform very elongate from base to beyond middle,

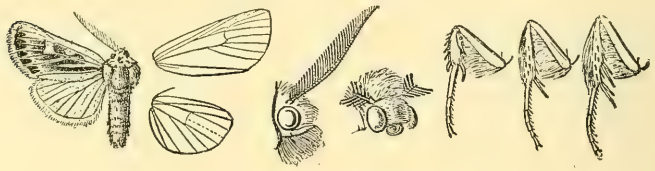


Fig. 50.—*Cladocerotis optabilis*, ♂ ½.

ochreous defined by black; orbicular and reniform ochreous defined by black, the former elliptical, open above, with a short black streak from its inner side below subcostal nervure, the latter open above and angled inwards on median nervure; the subterminal line represented by dentate ochreous marks on the veins extending to or to near termen, defined on outer side by black and with the area beyond them dark; cilia whitish. Hind wing ochreous white, suffused with brown in female.

Hab. S. France, 2 ♂, 2 ♀; Spain; Sicily; Algiers. *Exp.* 34 millim.

Genus **TRIPSEUXOA**, nov.

Type, *T. strigata.*

Proboscis aborted, minute; palpi oblique, the 2nd joint fringed with long hair in front, the 3rd porrect; frons with truncate conical prominence; eyes large, rounded; antennæ of male bipectinate, with rather long branches to apex; head and thorax clothed with hair only; fore tibiæ spined on inner side; mid and hind tibiæ spined. Fore wing with the apex somewhat produced; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

244. Tripseuxoa strigata, n. sp.

Head and thorax pale brownish ochreous; palpi blackish above; abdomen pale ochreous irrorated with fuscous. Fore wing ochreous grey irrorated with black; the median nervure and bases of veins

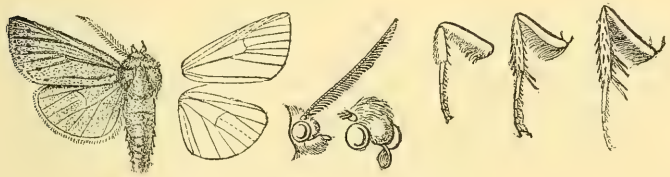


Fig. 51.—*Tripseuxoa strigata*, ♂. ½.

6, 4, 3, and medial part of vein 1 defined by fuscous, sometimes deep black, streaks; a black point sometimes present in middle of cell; a curved subterminal series of black or fuscous points and a terminal series. Hind wing ochreous white.

Hab. Argentina, Goya (*Perrins*), 1 ♂, 4 ♀ type. *Exp.*, ♂ 36, ♀ 44–48 millim.

Genus **STENAGROTIS**, nov.

Type, *S. edmondsi.*

Proboscis fully developed; palpi obliquely upturned, fringed with very long hair in front, the 3rd joint long; frons with truncate conical prominence; eyes large, rounded, overhung by long cilia; antennæ of male ciliated; head and thorax clothed with rough hair with some scales under it; tibiæ strongly spined. Fore wing long and narrow, the apex produced and the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

245. Stenagrotis edmondsi.

Trachodopalpus edmondsii, Butl. Trans. Ent. Soc. 1882, p. 116.

♂. Brownish grey; palpi with a few black hairs. Fore wing with the antemedial line represented by a few black scales between cell and inner margin; the postmedial line represented by some black scales between veins 7 and 1, slightly angled inwards in dis-

coidal fold, excurved to vein 4, then strongly incurved; some black scales on termen. Hind wing white tinged with brown; a terminal

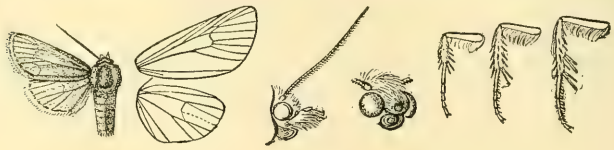


Fig. 52.—*Stenagrotis edmondsi*, ♂. $\frac{1}{1}$.

series of obscure fuscous spots; the underside with brown discoidal spot.

Hab. Chili (*Edmonds*), 1 ♂ type. *Exp.* 30 millim.

Genus **POROSAGROTIS.**

Type.

Porosagrotis, Smith, Bull. U.S. Nat. Mus. 38, p. 123 (1890) ..... *vetusta.*

Proboscis fully developed; palpi upturned, not reaching vertex of head, the 2nd joint broadly fringed with hair in front, the 3rd moderate; frons with truncate conical prominence with raised rim at extremity; tibiæ spined, the spines at extremity of fore tibiæ very stout. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle or shortly stalked; male with the claspers simple, hooked.

Sect. 1. Antennæ of male bipectinate with moderate branches to near apex.

A. Fore wing with veins 3, 4 defined by dentate white streaks.
  a. Fore wing with the orbicular confluent with the reniform. *dædalus.*
  b. Fore wing with the orbicular well separated from the reniform..... *pluralis.*
B. Fore wing with veins 3, 4 not defined by dentate white streaks.
  a. Fore wing with the orbicular diamond-shaped ..... *dolli.*
  b. Fore wing with the orbicular rounded.
    a^1. Fore wing with the median nervure and vein 1 streaked with white on medial area ..... *orthogonia.*
    b^1. Fore wing with the median nervure and vein 1 not streaked with white on medial area ..... *siccata.*

246. **Porosagrotis dædalus.** (Plate LIX. fig. 20.)

Porosagrotis dædalus, Smith, Bull. U.S. Nat. Mus. 38, p. 217 (1890); id. Cat. Noct. N. Am. p. 87.

♀. Head and thorax grey-white, mixed with ochreous and reddish-brown; palpi with black spots on 1st and 2nd joints at sides; patagia edged with dark brown above; abdomen white, slightly tinged with ochreous and irrorated with brown. Fore wing grey-white, the veins with dark brown streaks, the interspaces with yellowish and reddish-brown streaks; the lines entirely obsolete; the claviform a black-outlined loop from near base to beyond middle; the orbicular elongate, pointed at extremities and confluent with reniform, with dark centre and whitish annulus;

reniform small, dark, with indistinct whitish annulus; the veins of terminal area defined by whitish streaks; a subterminal series of sagittate dark spots; a terminal series of black points; cilia white at tips. Hind wing whitish suffused with brown; a punctiform terminal line; the cilia white; underside white, with small brown discoidal lunule and some brown suffusion on terminal area.

Hab. U.S.A., Colorado (*Bruce*), 2 ♀. *Exp.* 42 millim.

247. **Porosagrotis pluralis.** (Plate LIX. fig. 21.)

Agrotis pluralis, Grote, Bull. Geol. Surv. iv. p. 174 (1878); id. Ill. Essay, 55, pl. 2. f. 16; Smith, Cat. Noct. N. Am. p. 87.

♀. Head and thorax grey-white mixed with blackish; tegulæ with brown medial line and extremities; patagia edged above with ochreous; abdomen whitish, dorsally tinged with ochreous and ventrally irrorated with black. Fore wing with the marginal areas grey irrorated with dark brown, the disk ochreous with reddish-brown streaks in the interspaces; the subbasal, antemedial, and postmedial lines quite obsolete; median nervure and nervules streaked grey and black; claviform obsolete; orbicular and reniform grey irrorated with fuscous, with whitish annuli, the former lanceolate, open above, the latter much constricted at middle, its lower edge produced towards base; veins 3, 4 defined with white beyond the cell; the subterminal line indistinct, whitish, angled outwards at vein 7 and dentate at veins 3, 4; a terminal series of black points. Hind wing white tinged with brown, especially towards termen; the veins brown; cilia white, with a brown line through them; the underside white with the costal and terminal areas irrorated with brown; a discoidal point.

Hab. U.S.A., Nevada, 1 ♀ type, Colorado. *Exp.* 38 millim.

*248. **Porosagrotis dolli.** (Plate LIX. fig. 22.)

Agrotis dollii, Grote, Can. Ent. xiv. p. 216 (1882); Smith, Cat. Noct. N. Am. p. 87.

♀. Head and thorax brown, mixed with black and grey; abdomen white, dorsally tinged with brown, ventrally irrorated with fuscous. Fore wing white, tinged with brown and thickly irrorated with black; the claviform represented by an indistinct elongate dark streak defined by white; orbicular and reniform very small, defined by white, the former rather diamond-shaped, the latter a narrow lunule; the subterminal line represented by an indistinct series of small dark dentate marks on whitish streaks; a fine dark terminal line. Hind wing white, slightly tinged with fuscous, the veins brownish; the underside with the costal area irrorated with fuscous.

Hab. U.S.A., Arizona, Phœnix, in coll. J. B. Smith. *Exp.* 34 millim.

249. Porosagrotis orthogonia.

Agrotis orthogonia, Morr. Proc. Bost. Soc. N. H. xviii. p. 239 (1876) Smith, Cat. Noct. N. Am. p. 87.

♂. Head and thorax ochreous white mixed with dark brown; antennæ brown; tarsi with dark bands; abdomen white, slightly tinged with brown on dorsum towards extremity. Fore wing ochreous white irrorated with dark brown; a whitish subbasal line from costa to vein 1; the antemedial line whitish defined by dark scales, angled outwards below costa and acutely above inner

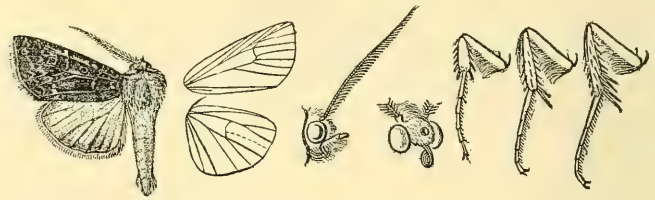


Fig. 53.—*Porosagrotis orthogonia*, ♂. ½.

margin; claviform distinct, with black outline, and rather small; the orbicular and reniform with greyish fuscous centres, whitish annuli, and black outline, the former round, the latter large; the postmedial line whitish, defined by a minutely dentate black line on its inner side, excurved from costa to vein 3, then incurved; the subterminal line whitish, dentate, with longer teeth at veins 7, 4, 3, and with the area beyond it darker; a terminal series of black points; cilia pale, with dark lines through them. Hind wing white, the veins brown; the termen suffused with brown from apex to vein 2.

♀. Fore wing with the termen paler; hind wing with the terminal area suffused with brown.

Hab. U.S.A., Utah, Nebraska, Colorado, Denver (*Bruce*), 1 ♂, 1 ♀, New Mexico, Arizona. *Exp.* 36 millim.

250. Porosagrotis siccata. (Plate LIX. fig. 23.)

Carneades siccata, Smith, Ent. News Philad. iv. p. 99, pl. vi. f. 1 (1893).

♂. Head and thorax grey slightly tinged with brown, and with a few black scales; palpi blackish at sides; abdomen grey. Fore wing grey, slightly tinged with brown and irrorated with fuscous; the subbasal line represented by dark points on costa and below cell, the antemedial line by a dark point on costa and indistinct line from cell to inner margin, angled outwards in submedian fold, then oblique; orbicular and reniform small, diffused, blackish, the former elliptical; the postmedial line indistinct, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line indistinct, pale, waved, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing white, the termen very slightly tinged with brown.

Hab. U.S.A., Colorado, Poncha Spring, 1 ♂. *Exp.* 30 millim.

Sect. II. Antennæ of male bipectinate with short branches, the apical part serrate.

A. Fore wing with the costal area whitish to the postmedial line ..... *gypætina.*
B. Fore wing with the costal area not whitish to the postmedial line.
a. Fore wing with subterminal series of short white streaks on the veins defined on each side by black ..... *brachystria.*
b. Fore wing without subterminal series of black-defined white streaks ..... *patula.*

251. **Porosagrotis gypætina.** (Plate LIX. fig. 24.)

Agrotis gypætina, Guen. Noct. i. p. 290 (1852).
Agrotis pseudoplectra, Snell. Boll. Ac. Arg. iii. p. 96 (1879).

Head and thorax clothed with black, dark red-brown, ochreous and grey scales; abdomen ochreous tinged with brown, the ventral surface irrorated with dark brown. Fore wing black-brown, the costal area ochreous white to the postmedial line including the basal half of cell and median nervure, the veins on it defined by slight dark streaks; the subbasal line represented by double striæ from costa and median nervure filled in with ochreous; the antemedial line double, angled outwards on subcostal nervure and inwards on median nervure, obsolete below vein 1; claviform elongate, strongly defined by black; orbicular and reniform small, with fuscous centres and pale annuli defined by black, the former round or oblique, elliptical, the cell filled in with black before and between the stigmata and beyond the reniform; the postmedial line minutely dentate, defined by pale brown on outer side, slightly bent outwards below costa, excurved to vein 4, then oblique; subterminal line represented by a series of dentate black and ochreous marks, angled outwards at vein 7 and excurved at middle; cilia black mixed with ochreous. Hind wing ochreous white tinged with brown towards margins, in female suffused with fuscous except towards base, the underside with the costal area irrorated with brown.

Hab. Uruguay, Colon (*O. Thomas*), 1 ♂; Argentina, Goya (*Perrins*), 1 ♂, 1 ♀. *Exp.*, ♂ 36, ♀ 44 millim. Type† ♂ in Mus. Paris.

252. **Porosagrotis brachystria**, n. sp. (Plate LIX. fig. 25.)

♀. Head and thorax dark brown; pectus and legs with some pale hair; abdomen paler brown. Fore wing dark brown slightly tinged with grey; a double waved subbasal line from costa to submedian fold; the antemedial line double, waved, more strongly excurved in cell and above inner margin; the claviform defined by black; the orbicular and reniform defined by black, the former large, open above, the cell before and between the stigmata black; black streaks in discal fold and above vein 4 from the reniform to the postmedial line, which is indistinct, double, dentate, excurved to vein 4, then incurved; the subterminal line represented by a series of short ochreous streaks defined on each side by black in the

interspaces; a terminal series of black points. Hind wing pale brown, the cell and area below it whitish towards base; the underside with the white in interspaces more extensive.

Hab. Argentina (*Leech*), 1 ♀ type. *Exp.* 36 millim.

253. Porosagrotis patula.

Agrotis patula, Wlk. x. 329 (1856); Smith, Cat. Noct. N. Am. p. 86.
Agrotis septentrionalis, Möschl. Wien. ent. Mon. vi. p. 133, pl. 1. f. 3 (1862); Staud. Cat. Lep. pal. p. 152.

♂. Head and thorax grey tinged with reddish brown; tegulæ and patagia red-brown on outer side; legs dark brown mixed with grey; abdomen pale brown. Fore wing pale brown suffused with purplish grey; black points below costa and cell; the antemedial line indistinct, black, interrupted, slightly angled outwards below

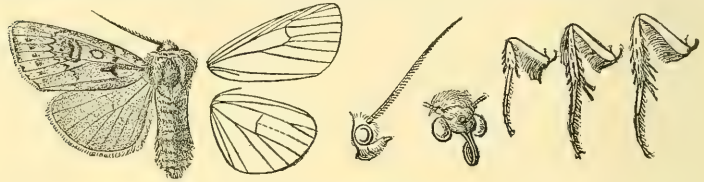


Fig. 54.—*Porosagrotis patula*, ♂. $\frac{1}{1}$.

the cell and not extending below vein 1; claviform small, black; orbicular and reniform outlined with black, the former incomplete above, the latter with black line in middle; the postmedial line minutely dentate, bent outwards below costa and incurved below vein 3; a subterminal series of dentate marks. Hind wing pale brown; the underside paler, the costal area suffused with brown; a brown discoidal spot.

♀. Thorax and fore wing darker.

Hab. Canada, Labrador, 1 ♀; U.S.A., Rocky Mts. (*Lord Derby*), 1 ♂ type; Siberia. *Exp.* 40–46 millim.

Sect. III. Antennæ of male serrate and fasciculate.

A. Fore wing with the veins of terminal area defined by dentate white streaks ..... *longidens.*
B. Fore wing with the veins of terminal area not defined by white streaks.
  a. Fore wing with the postmedial line reduced to a series of points.
    a^1. Fore wing lilacine grey, with white points on outer side of postmedial line ..... *vetusta.*
    b^1. Fore wing without white points beyond the postmedial line.
      a^2. Fore wing white irrorated with fuscous ..... *catenula,*
      b^2. Fore wing grey tinged with ochreous ..... *texana.*
  b. Fore wing with the postmedial line dentate and produced to points on the veins ..... *satiens.*
  c. Fore wing with the postmedial line dentate, not produced to points on the veins.
    a^1. Fore wing grey-brown ..... *scortea.*
    b^1. Fore wing chestnut-red ..... *mimallonis.*

*254. Porosagrotis longidens. (Plate LIX. fig. 26.)

Feltia longidens, Smith, Bull. U.S. Nat. Mus. 38, p. 217 (1890); id. Cat. Noct. N. Am. p. 81.

♀. Head and thorax brownish ochreous; tegulæ with fine dark medial line; patagia with black line near upper edge; tarsi blackish with pale rings; abdomen ochreous white. Fore wing brownish ochreous; the veins with dark streaks; the costa, submedian fold, cell, discal area, and a streak above vein 2 dark brown; a blackish streak in submedian fold with the elongate dark-defined claviform on it; orbicular and reniform with brownish centres and ochreous annuli defined by black, the former oblique, oblong, open above and with its inner edge produced as a black streak in cell towards base; the veins of terminal area defined by dentate ochreous marks extending to termen, leaving wedge-shaped blackish marks between them, with a series of ochreous points on them representing the subterminal line, two short subterminal black streaks before apex; a terminal series of small black lunules; cilia with a dark line through them. Hind wing pure white, with slight terminal series of dark striæ; the underside with the costa slightly tinged with ochreous.

Hab. U.S.A., Colorado, Turkey Creek in Coll. J. B. Smith, New Mexico, Las Vegas. *Exp.* 36 millim.

255. Porosagrotis vetusta.

Mythimna vetusta, Wlk. ix. 78 (1856); Smith, Cat. Noct. N. Am. p. 85.
Agrotis murænula, Grote & Rob. Trans. Am. Ent. Soc. i. p. 352, pl. vii. f. 48 (1868); Harv. Bull. Buff. Soc. Nat. Sci. iii. p. 73, pl. 3. f. 3.

Head and thorax lilacine grey, the scales pencilled with dark

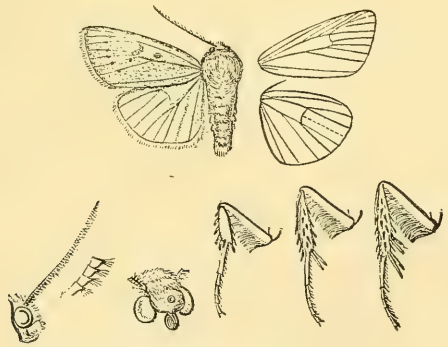


Fig. 55.—*Porosagrotis vetusta*, ♂. ½.

brown; palpi black at sides except at tips; abdomen white, irrorated with brown and dorsally tinged with ochreous. Fore wing lilacine grey, irrorated with dark brown; the subbasal line

obsolete ; the antemedial line indistinct or obsolete except at costa, double, angled outwards below costa, in submedian fold, and more strongly above inner margin ; claviform almost obsolete ; orbicular and reniform slightly defined by black, the former with blackish centre, the latter with some blackish in lower part ; the postmedial line strongly dentate with white points at end of teeth, bent outwards below costa and incurved in submedian interspace ; a terminal series of black points. Hind wing white, the veins, costal area, and termen slightly tinged with brown.

Hab. Canada, Nova Scotia (*Redman*), 1 ♀ type ; U.S.A., Massachusetts, N. York, 1 ♂, 2 ♀, Grote and Zeller Colls., Georgia, Colorado (*Bruce*), 1 ♂. *Exp.* 40–46 millim.

256. Porosagrotis catenula. (Plate LIX. fig. 27.)

Agrotis catenula, Grote, N. Am. Ent. i. p. 44 (1879) ; Smith, Cat. Noct. N. Am. p. 85.

Head and thorax white, the scales tipped with pale yellow-brown ; antennæ blackish ; tibiæ banded with fuscous ; abdomen white, dorsally tinged with ochreous. Fore wing white, with a slight ochreous tinge and irrorated with dark brown ; the subbasal line represented by blackish striæ on costa and below cell, or obsolete ; the antemedial line represented by black points on costa, in submedian fold, and on inner margin, or the two latter obsolete ; claviform obsolete ; orbicular represented by a black point in cell, the reniform by a fuscous discoidal lunule or spot at lower angle of cell ; the postmedial line represented by a series of black points on the veins, bent outwards below costa, and oblique below vein 4 ; a terminal series of black points and a slight diffused fuscous mark below apex. Hind wing white, the veins and termen tinged with brown.

Hab. U.S.A., Montana, Colorado (*Snow*), 1 ♂ type, (*Bruce*), 1 ♂, California (*Walsingham*), 3 ♂, 7 ♀, New Mexico. *Exp.* 36–44 millim.

*257. Porosagrotis texana. (Plate LXI. fig. 2.)

Agrotis texanus, Grote, Proc. Ent. Soc. Phil. ii. p. 273, pl. vi. f. 2 (1863) ; Smith, Cat. Noct. N. Am. p. 86.

Agrotis obesula, Smith, Proc. U.S. Nat. Mus. x. p. 456 (1887) ; id. Cat. Noct. N. Am. p. 85.

♂. Rather dark yellowish grey, irrorated and striated with fuscous. Fore wing with the lines distinct, interrupted, punctiform ; subbasal line double ; antemedial line erect, excurved in interspaces, double at costa ; claviform obsolete ; orbicular and reniform ill-defined, fuscous, the former small, round ; postmedial line double at costa, then crenulate, bent outwards below costa, excurved to vein 4, then oblique ; subterminal line fuscous, punctiform, even, with a dark patch before it on costa ; terminal area more thickly irrorated with fuscous. Hind wing white ; the underside with

dark irroration and postmedial line almost obsolete except on costal area.

Hab. U.S.A., Montana, Texas. *Exp.* 38 millim. This species is unknown to me; figured from a photograph from type *obesula* in U.S. Nat. Mus.

258. Porosagrotis satiens. (Plate LIX. fig. 28.)

Agrotis satiens, Smith, Trans. Am. Ent. Soc. xvii. p. 45 (1890); id. Cat. Noct. N. Am. p. 85.

♂. Head and thorax grey-brown slightly tinged with fuscous; palpi blackish at sides; tegulæ with black medial line; tarsi banded with black; abdomen whitish tinged with brown. Fore wing pale brown, irrorated with black; the subbasal line represented by double black striæ from costa and cell; the antemedial line indistinct, double, oblique, waved and angled outwards above inner margin; claviform small, slightly defined by black; orbicular and reniform defined by black and with their centres defined by blackish, the former elliptical, rather pointed at extremities; an indistinct medial shade excurved from costa to median nervure, then oblique; the postmedial line somewhat dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line pale, defined by slight fuscous suffusion before and beyond it, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pure white; the termen slightly tinged with brown at discal fold; a fine terminal brown line; the underside with the costal area tinged with ochreous and slightly irrorated with brown; a discoidal point and curved postmedial series on the veins.

Hab. Canada, Br. Columbia; U.S.A., Colorado (*Bruce*), 1 ♂. *Exp.* 40 millim.

*259. Porosagrotis scortea. (Plate LIX. fig. 29.)

Peridroma scortea, Schaus, J. N. Y. Ent. Soc. vi. p. 141 (1898).

♂. Head and thorax fuscous brown mixed with grey; abdomen pale grey-brown. Fore wing grey-brown, the veins slightly irrorated with grey and black; the subbasal line represented by a black point on median nervure; traces of a waved antemedial line and of the pale-edged claviform stigma; orbicular and reniform indistinct, irrorated white and fuscous, and with whitish annuli, the former round; a fine dentate postmedial line bent outwards below costa, excurved to vein 4, then incurved; subterminal line defined by diffused brown on its inner side, angled outwards at vein 7 and excurved at middle; a fine terminal line and whitish line at base of cilia. Hind wing semihyaline whitish, tinged with brown especially on terminal area, the veins brownish; cilia white with a brown line through them; underside white, the costal and terminal areas irrorated with brown; a discoidal point and curved postmedial line.

Hab. Mexico, Orizaba, type † ♂ in Coll. Schaus. *Exp.* 34 millim.

260. **Porosagrotis mimallonis.** (Plate LIX. fig. 30.)

Agrotis mimallonis, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 98 (1873); Smith, Cat. Noct. N. Am. p. 85.
Agrotis rufipennis, Grote, Can. Ent. vii. p. 83 (1875).

♂. Head and thorax bright chestnut-red, sometimes tinged with crimson or purple; palpi blackish at sides; antennæ brown; tibiæ and tarsi blackish ringed with grey; abdomen dorsally ochreous tinged with fuscous, the sides, ventral surface, and anal tuft reddish. Fore wing chestnut-red; a slight waved black subbasal line from costa to submedian fold; the antemedial line indistinct, angled inwards on median nervure and outwards above inner margin; the orbicular and reniform small, fuscous, with greyish annuli; an oblique dentate medial line from lower angle of cell to inner margin; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 3, then oblique; the subterminal line indistinct, pale, slightly dentate, and with the area beyond it rather darker. Hind wing white; the veins and termen brownish; the underside with dark discoidal point, the costal area irrorated with red.

♀. Hind wing with the terminal area suffused with brown.

Hab. Canada; U.S.A., N. York 2 ♂, 1 ♀ type *rufipennis*, Montana 1 ♂ Grote Coll., California (*Walsingham*), 1 ♀. *Exp.* 40–44 millim.

Genus **MICRAGROTIS**, nov.

Type, *M. axylides*.

Proboscis rather small; palpi short, oblique, fringed with hair below; frons with truncate conical corneous prominence with raised walls and curved corneous plate below it; antennæ of male minutely ciliated; head and thorax clothed with hair and scales; fore tibiæ short and broad, spined at sides, and with two long curved claws on inner side at extremity, and short claw or claws on outer; mid and hind tibiæ spined. Fore wing short, the apex rounded; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 stalked.

Sect. I. Fore tibiæ with 2 claws and 2 spines on outer side, 2 claws and 6 spines on inner.

A. Fore wing with fine dark streaks in interspaces of terminal area.
  a. Fore wing suffused with black except on terminal area. *exusta.*
  b. Fore wing suffused with bluish grey ..... *interstriata.*
  c. Fore wing pale reddish brown.
    a^1. Fore wing with black streak below base of cell ..... *strigibasis.*
    b^1. Fore wing without black streak below base of cell ... *axylides.*
B. Fore wing without dark streaks in interspaces of terminal area.
  a. Fore wing without black patch in cell between the stigmata.
    a^1. Fore wing with rufous medial line ..... *lacteata.*
    b^1. Fore wing without medial line ..... *puncticostata.*
  b. Fore wing with black patch in cell between the stigmata ..... *rufescens.*

261. **Micragrotis exusta**, n. sp. (Plate LX. fig. 1.)

♂. Head and thorax fuscous, the tips of scales grey, the vertex of head and base of tegulæ ochreous or rufous; abdomen brownish ochreous, the ventral surface fuscous. Fore wing greyish fuscous; the basal area tinged with rufous; the subbasal line represented by slight striæ from costa and cell; an indistinct interrupted waved black antemedial line; claviform small, slightly defined by black; orbicular and reniform with blackish centres and defined by black, the former round; the postmedial line indistinct dentate, bent outwards below costa, slightly incurved at discal fold, incurved below vein 4, the area beyond it ochreous with dark streaks on the veins and obscure rufous streaks in the interspaces; some pale points on costa towards apex; indistinct dark dentate marks on termen above middle and tornus; a terminal series of minute black lunules; the cilia chequered ochreous and fuscous. Hind wing yellowish white, the costal area tinged with fuscous; the underside with the costal area irrorated with fuscous, a slight discoidal point and postmedial series of striæ on the veins.

Hab. Mashonaland, Salisbury (*Marshall*), 3 ♂ type. *Exp.* 34 millim.

262. **Micragrotis interstriata.** (Plate LX. fig. 3.)

Agrotis interstriata, Hmpsn. Ann. S. Afr. Mus. ii. p. 264 (1902).

Head and thorax black, with some whitish round base of antennæ; tarsi with whitish rings; abdomen ochreous, the ventral surface blackish. Fore wing fuscous black, suffused with blue-grey except costal area and cell to beyond postmedial line; the terminal area browner, with black streaks on the veins and brown streaks in the interspaces; the antemedial line fine, double, angled slightly inwards below costa and on subcostal nervure, strongly on median nervure, very strongly on vein 1; orbicular and reniform small, defined by black, the former round, whitish, the latter with fuscous centre; an oblique brown line from lower angle of cell to inner margin; the postmedial line close to reniform, dentate and produced to points on the veins, bent outwards below costa, and incurved below vein 4; some pale points on costa towards apex; a terminal series of black points; cilia chequered pale and black. Hind wing white, the costal area tinged with fuscous, the cilia with ochreous; the underside with slight discoidal point.

Hab. Mashonaland, Salisbury (*Marshall*), 1 ♂; Natal, Weenen, 1 ♂ type, Karkloof (*Marshall*), 3 ♂, 1 ♀; Cape Colony, Transkei (*Miss F. Barrett*), 1 ♂. *Exp.* 30 millim.

263. **Micragrotis strigibasis.** (Plate LX. fig. 4.)

Agrotis strigibasis, Hmpsn. Ann. S. Afr. Mus. ii. p. 264 (1902).

Head and thorax ochreous mixed with rufous; tegulæ with blackish medial line; abdomen ochreous. Fore wing ochreous suffused with rufous; the subbasal line represented by a striga from

costa; the antemedial line double, filled in with ochreous, angled outwards on subcostal nervure, inwards to base in cell and moderately inwards on vein 1 and outwards above inner margin; a slight black streak below base of cell; claviform small, slightly defined by blackish; orbicular and reniform small, with fuscous centres and pale annuli defined by black, the former round; a slight oblique shade from lower angle of cell to inner margin; postmedial line defined by ochreous on outer side, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; a terminal series of blackish points. Hind wing yellowish white; the underside with the costal area tinged with ochreous, a postmedial series of points on the veins developed into a waved line towards costa.

Hab. Basutoland, Maseru (*Crawshay*), 2 ♂, 1 ♀, Masite, 1 ♀; Cape Colony, Annshaw (*Miss F. Barrett*), 2 ♂, 1 ♀ type *Exp.* 30 millim.

264. Micragrotis axylides, n. sp.

Head and thorax ochreous mixed with fuscous; patagia with a purplish tinge; tarsi with black and pale rings; abdomen ochreous tinged with fuscous brown. Fore wing greyish ochreous suffused with purplish brown; the veins streaked with blackish; two fine pale streaks in base of cell; the antemedial line double, the inner line indistinct, dentate and angled strongly inwards on subcostal and median nervures and vein 1; orbicular and reniform small, with blackish centres and pale annuli defined by black, the former

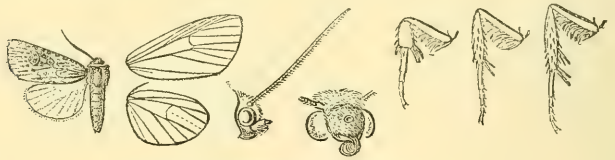


Fig. 56.—*Micragrotis axylides*, ♂. 1/1.

round, the cell between them and area above it suffused with fuscous black; traces of an oblique shade from lower angle of cell to inner margin; the postmedial line indistinctly double, dentate, and produced to black and white points on the veins, bent outwards below costa, incurved at discal fold and below vein 4; a terminal series of black points. Hind wing yellowish white, the costal area and termen slightly tinged with brown; the underside with the costal area irrorated with brown.

Hab. Punjab, Mean Meer (*Harford*), 2 ♂ type; Sind, Bhug (*Nurse*), 1 ♀. *Exp.*, ♂ 25, ♀ 30 millim.

265. Micragrotis lacteata, n. sp. (Plate LIX. fig. 31.)

Head and thorax grey mixed with ferruginous; palpi with the 2nd joint blackish at sides; frons with black bar above; tegulæ

with black medial band; prothoracic crest with black band; tegulæ rufous; tibiæ and tarsi black with ochreous rings; abdomen greyish ochreous. Fore wing pale blue-grey with slight black irroration; the costal area suffused with rufous to near apex; the subbasal line indistinct, double, waved from costa to submedian fold; antemedial line indistinct double, waved; claviform represented by a black point at its extremity; orbicular and reniform small, with black centres and pale annuli defined by black, the former round; an oblique waved ferruginous line from lower angle of cell to inner margin; the postmedial line indistinct, double, dentate, and produced to a series of points on the veins, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line defined by the area beyond it being rufous, angled outwards at vein 7, excurved at middle and bent outwards to tornus; a terminal series of black points; cilia chequered rufous and fuscous. Hind wing pure white, with fine dark punctiform terminal line; the underside with the costal area ochreous irrorated with brown, a slight discoidal point and curved postmedial series.

Hab. Br. E. Africa, Athi R. (*Betton*), 4 ♂, 1 ♀ type. *Exp.* 28–30 millim.

266. Micragrotis puncticostata. (Plate LIX. fig. 32.)

Agrotis puncticostata, Hmpsn. Ann. S. Afr. Mus. ii. p. 263 (1902).

♂. Head and thorax black mixed with some grey; metathorax more or less red-brown; frons with deep black bar above; tegulæ with black medial line; tarsi with pale rings; abdomen ochreous irrorated with fuscous. Fore wing grey, with slight dark irroration and blackish streaks on the veins; the costal area suffused with rufous and black to the subterminal line; a diffused rufous patch on base of inner area; the subbasal line represented by indistinct double striæ from costa; the antemedial line indistinct, double, waved and angled inwards on the veins; claviform small, slightly defined by black; orbicular and reniform small, with black centres and pale annuli defined by black, the former round; the postmedial line dentate and produced to a series of black and white points on the veins, bent outwards below costa, excurved to vein 4, then incurved; a series of points on costa towards apex; the subterminal line pale, defined by the area beyond it being reddish brown, angled outwards at vein 7 and somewhat dentate at veins 3, 4; a fine black terminal line; cilia chequered rufous and black. Hind wing white; the costal area irrorated with fuscous, a discoidal spot and postmedial series of short streaks on the veins.

♀. Fore wing rather more suffused with brown; hind wing tinged with ochreous.

Hab. Natal, Estcourt (*Hutchinson*), 1 ♂, 1 ♀ type; Basutoland, Maseru (*Crawshay*), 2 ♂. *Exp.* 30 millim.

267. **Micragrotis rufescens**, n. sp. (Plate LX. fig. 2.)

Head and thorax rufous mixed with greyish; tegulæ with slight dark medial line; abdomen pale rufous. Fore wing pale rufous with slight dark irroration; the subbasal line represented by double striæ from costa and cell; a slight black streak below base of cell; the antemedial line indistinct, double, waved, angled inwards on vein 1 and outwards above inner margin; orbicular and reniform defined by black and with slight fuscous centres, the former round or oblique, elliptical, the latter constricted at middle, the cell between them black; the postmedial line double, dentate, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line indistinct, pale, defined by fuscous suffusion before it at costa, developing into a pale apical patch, angled outwards below costa and excurved at middle. Hind wing yellowish white, the costal area tinged with fuscous and the terminal area in female; the underside with the costal area irrorated with fuscous, a slight discoidal spot and postmedial series of points on the veins.

Hab. Cape Colony, Annshaw (*Miss F. Barrett*), 1 ♂ type, Bushman L. (*Alston*), 1 ♀. *Exp.* 36 millim.

Sect. II. Fore tibiæ with one claw on outer side and two on inner.

268. **Micragrotis acydonta**, n. sp.

♂. Head and thorax ochreous mixed with black; tarsi with pale rings; abdomen ochreous tinged with fuscous, and with sublateral blackish stripes. Fore wing ochreous, the costal area extending to median nervure and vein 2 suffused with fuscous brown to the postmedial line; the subbasal line represented by double striæ from costa filled in with ochreous; a double waved

Fig. 57.—*Micragrotis acydonta*, ♂. ½.

antemedial line strongly angled inwards on vein 1 and outwards above inner margin, the claviform being represented by a small black spot on its outer edge; orbicular and reniform defined by black, the former small, round, white, the latter blackish irrorated with white, the end of cell and area round it suffused and irrorated with black; the postmedial line dentate and produced to long black and white points on the veins, bent outwards below costa, slightly

incurved at discal fold and strongly below vein 4; some pale points on costa towards apex; the subterminal line defined by the brown suffusion on its inner side and blackish on outer, bent outwards to apex, angled inwards at discal fold, then excurved; a terminal series of black and white points. Hind wing ochreous white, the costal and terminal areas suffused with brown; a terminal series of blackish striæ; the underside with black discoidal spot and indistinct dentate postmedial line.

Hab. Br. E. Africa, Athi-ya-Mawe (*Betton*), 1 ♂ type. *Exp.* 26 millim.

Genus **EUXOA**.

	Type.
Euxoa, Hübn. Verz. p. 209 (1827)	*decora.*
Rhyacia, Hübn. Verz. p. 209 (1827)	*lucipeta.*
Mimetis, Hübn. Verz. p. 210 (1827)	*decora.*
Metaxyia, Hübn. Verz. p. 223 (1827)	*vitta.*
Exarnis, Hübn. Verz. p. 225 (1827)	*obelisca.*
Scotia, Hübn. Verz. p. 226 (1827)	*cinerea.*
Brotis, Hübn. Verz. p. 226 (1827)	*nigricans.*
Agronoma, Hübn. Verz. p. 227 (1827)	*crassa.*
Georyx, Hübn. Verz. p. 227 (1827)	*segetis.*
Telmia, Hübn. Verz. p. 227 (1827)	*cursoria.*
Orthodes, Guen. Noct. i. p. 371 (1852)	*t-nigrum.*
Tetrapyrgia, Wlk. xxxiii. p. 711 (1865)	*albinasus.*
Elegarda, Wlk. xxxiii. p. 712 (1865)	*albinasus.*
Pleonectopoda, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 136 (1873)	*levisi.*
Orbifrons, Staud. Stett. ent. Zeit. xxxviii. p. 187 (1877)	*singularis.*
Carneades, Grote, Can. Ent. xv. p. 4 (1883), nec Bates, Col. 1869	*mœrens.*
Chorizagrotis, Smith, Bull. U.S. Nat. Mus. xxxviii. p. 98 (1890)	*auxiliaris.*
Rhizagrotis, Smith. Bull. U.S. Nat. Mus. xxxviii. p. 103 (1890)	*acclivis.*
Agrotis, Hübn. Tent. ined.	*segetis.*

Proboscis fully developed; palpi upturned, the 2nd joint fringed with hair in front, the 3rd moderate; frons with truncate conical prominence with raised rim; vestiture hairy; tibiæ strongly spined; pro- and metathorax with rather spreading crests. Fore wing with veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; male with the claspers bifurcate.

Sect. I. (*Agronoma*). Antennæ of male bipectinate to apex, with long branches.

A. Fore wing with the orbicular elongate, elliptical.
  a. Fore wing with the orbicular large.
    a^1. Fore wing with the veins defined by whitish streaks. *obesa.*
    b^1. Fore wing with the veins not defined by whitish streaks.
      a^2. Fore wing with the veins streaked with white... *polybela.*
      b^2. Fore wing with the veins not streaked with white. *crassa.*
  b. Fore wing with the orbicular small.
    a^1. Fore wing with the antemedial line angled outwards below the claviform ..... *graslini.*
    b^1. Fore wing with the antemedial line not angled outwards below the claviform ..... *lasserrei.*
B. Fore wing with the orbicular oblique, elliptical ..... *rugifrons.*

C. Fore wing with the orbicular round.
a. Fore wing with the veins not streaked with white.
a^1. Fore wing with the costal area and disk suffused with rufous.
a^2. Hind wing white..... *bœtica*.
b^2. Hind wing suffused with brown on terminal area . *pierreti*.
b^1. Fore wing with the costal area and disk whitish ... *lansarotensis*.
b. Fore wing with the veins streaked with white ..... *trifida*.

269. Euxoa obesa.

Agrotis obesa, Boisd. Ind. Meth. p. 112 (1829); id. Icon. Lép. Eur. pl. 75. ff. 1, 2; Dup. Lép. Fr. Suppl. iii. p. 173, pl. 16; Herr.-Schäff. Schmett. Eur. ii. pl. 5. f. 22; Staud. Cat. Lep. pal. p. 152.
Agrotis lipara, Rmbr. Ann. Soc. Ent. Fr. 1848, p. 68.
Agrotis scytha, Alph. Rom. Mém. v. p. 143 (1889).

♂. Head and thorax yellow-brown mixed with grey; palpi blackish at sides; abdomen white tinged with ochreous. Fore wing yellow-brown, the interspaces suffused with fuscous brown towards termen; the subbasal line represented by black points below costa and cell; the antemedial line obsolete except in submedian interspace, where it is blackish and angled outwards in the fold; claviform very large, somewhat quadrate, red-brown defined by black; orbicular and reniform red-brown, with ochreous annuli defined by black, the former large, diamond-shaped, and connected with the reniform which is large; the postmedial line

Fig. 58.—*Euxoa obesa*, ♂. ¾.

indistinct, blackish, defined by ochreous on outer side, bent outwards below costa, excurved round the reniform, then incurved; a subterminal series of ochreous lunules with dentate black marks on their inner side, slightly angled outwards at vein 7 and excurved at middle; the veins of terminal area streaked with black and defined by pale streaks; some pale points on costa towards apex; a terminal series of small black lunules. Hind wing white, the veins and termen tinged with ochreous.

♀. Hind wing with pale fuscous discoidal lunule and terminal band.

Ab. 1. *scytha*: paler; the fore wing almost white.—S. Russia; W. Asia; Persia.

Hab. S. France, 4 ♂, 3 ♀, Frey & Leech Colls.; Spain; Italy; Algeria; S. Russia; Armenia, 2 ♂; Asia Minor, Pontus; Syria; Persia; W. Turkestan, Turkomania. *Exp.* 36 millim.

Larva. Mill. Iconographie, iii. p. 302, pl. 137. ff. 1–3.
Pale greenish, the dorsal area tinged with brown and with pale dorsal line; head and thoracic shield brown. Food-plant: flowers of *Pterotheca nemaucensis.*

*270. Euxoa polybela. (Plate LXV. fig. 1.)

Euxoa polybela, de Joan. Bull. Soc. Ent. Fr. 1903, p. 28.

♀. Head, tegulæ, and patagia olive-ochreous tinged with brown; palpi and sides of frons blackish; thorax whitish; abdomen ochreous, dorsally tinged with fuscous. Fore wing with the apex rather produced and acute, ochreous, the inner margin tinged with rufous, the veins whitish defined by fine brown streaks; a brown patch below cell near base confluent with the brown claviform, both marks being incompletely defined by black and with whitish streak in submedian fold; a short subbasal black streak above inner margin; orbicular and reniform brown, the veins on them white, the former produced on outer side and confluent with the latter, the former partially defined by black above and the latter on outer side; the subterminal line defined on inner side by a series of prominent dentate brown marks with small triangular black spots on them; a series of black striæ just before termen; cilia rufous, with grey and black line through them. Hind wing whitish irrorated with dark brown; a brown discoidal lunule; the inner margin brown; a terminal series of brown striæ; the underside with dark brown streak in base of cell, the discoidal lunule prominent, with the discocellulars pale.
Hab. Algeria, Philippeville, type † ♀ in Coll. Joannis. *Exp.* 36 millim.

271. Euxoa crassa.

Noctua crassa, Treit. Schmett. Eur. v. i. p. 166 (1826); Hübn. Eur. Schmett., Noct. f. 560; Godt. Lép. Fr. v. p. 236, pl. 67. ff. 1, 2; Staud. Cat. Lep. pal. p. 152.
Agrotis lata, Treit. Schmett. Eur. Suppl. x. p. 24 (1834); Herr.-Schäff. Schmett. Eur. ii. pl. 4. f. 20 & pl. 6. f. 29.
Agrotis golickei, Ersch. Hor. Soc. Ent. Ross. viii. p. 316 (1871); Fedtsch. Reis. p. 41, pl. 3. ff. 39, 40.
Agrotis huguenini, Rühl. Soc. Ent. 1891, p. 4.

♂. Head and thorax yellow-brown tinged with fuscous; palpi blackish at sides; tarsi banded with black; abdomen ochreous banded with fuscous, the base whitish. Fore wing pale ochreous, suffused and irrorated with fuscous brown; a double waved black subbasal line from costa to submedian fold filled in with ochreous; a similar antemedial line dentate outwards below costa and very strongly above inner margin; claviform well developed and outlined with black; orbicular and reniform with fuscous centres, pale annuli, and black outline, the former elliptical and often produced on outer side, the latter large; postmedial line waved, black, defined by ochreous on outer side, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex;

subterminal line pale, angled outwards at vein 7 and dentate at veins 4 and 3, with dentate black marks before its medial part more or less prominently continued as streaks to termen; a terminal series of black points; cilia with a brown line through them. Hind wing pure white.

♀. Rather darker; hind wing with the terminal area suffused with brown; a dark terminal line, and line through the cilia.

Ab. 1. *lata*. Larger, the antennæ thicker, the fore wings more variegated.—Mediterranean subregion.

Ab. 2. *golicei*. Much paler; fore wing with the ground-colour ochreous-grey.—Armenia; Persia; C. Asia.

Hab. France; Germany, Zeller Coll.; Hungary, Frey Coll.; Spain; Sardinia; Italy (*Leach*); Sicily; Algiers; Greece; S. Russia; Armenia; Asia Minor, Pontus, Taurus; W. Turkestan, Tekké, 1 ♂, Ferghana; W. Siberia, Altai. *Exp.*, ♂ 44, ♀ 48 millim.

272. Euxoa lasserrei.

Luperina lasserrei, Oberth. Ét. Ent. vi. p. 86, pl. 11. ff. 13, 14 (188!); Staud. Cat. Lep. pal. pp. 154, 254.
Heliophobus unctus, Christ, Stett. ent. Zeit. 1887, p. 164; id. Rom. Mém. v. p. 25, pl. 2. f. 1; Staud. Cat. Lep. pal. p. 154.
Agrotis sabura, Mab. Bull. Soc. Ent. Fr. 1888, p. 42.

♂. Head and thorax grey and pale red mixed with black; palpi blackish at tips; tegulæ with black medial line; tarsi banded with black; abdomen ochreous white. Fore wing pale red irrorated and in parts clouded with fuscous; a waved subbasal line from costa to submedian fold; a waved antemedial line excurved below costa and angled outwards above inner margin to postmedial line; claviform well developed, defined by black; cell clouded with fuscous, the orbicular and reniform defined by black, the former elliptical; postmedial line dentate, slightly bent outwards below costa, excurved to vein 4, then oblique; the subterminal line represented by a series of whitish lunules with dentate dark marks before them, angled outwards at vein 7 and strongly dentate at veins 3 and 2; the veins of terminal half with fuscous streaks; a terminal series of small black lunules. Hind wing white; the veins slightly tinged with brown; some postmedial points on median nervules; the underside with the costal area irrorated with fuscous; a small discoidal spot and a series of postmedial striæ on the veins.

Ab. 1. *uncta*. Fore wing not tinged with rufous.—Turkomania.

Hab. Algeria, 1 ♂; Tunis, Gabes type †, *sabura* in Coll. Mabille; Palestine; W. Turkestan, Turkomania. *Exp.* 32 millim.

273. Euxoa graslini.

Agrotis graslini, Ramb. Ann. Soc. Ent. Fr. 1848, p. 70, pl. i. ff. 1, 2; Herr.-Schäff. Eur. Schmett., Noct. f. 623; Staud. Cat. Lep. pal. p. 152.

Head and thorax pale red-brown mixed with white; pectus, legs, and abdomen yellowish white. Fore wing pale brownish ochreous, the costal area and veins whitish; an indistinct antemedial whitish

line acutely dentate inwards below cell and on vein 1, angled outwards in submedian fold and more strongly above inner margin; claviform elongate, brown defined with dark brown; orbicular minute, elliptical, white with brown central point and defined by dark brown; reniform with fuscous centre and white annulus defined by dark brown; the postmedial line brown defined by whitish on outer side, minutely dentate, slightly bent outwards below costa, incurved in discal fold and oblique below vein 4; the subterminal line indistinct, whitish, with dentate red-brown marks on inner side, angled outwards at vein 7 and excurved at middle, the area beyond it rather darker with terminal series of small black lunules; cilia with a blackish line near extremity; the costa somewhat excavate beyond middle. Hind wing white, the veins and a fine terminal line brownish; the underside with slight discoidal lunule.

Ab. 1. Fore wing with the cell and the area below and just beyond it suffused with bright rufous.

Hab. France, W. Coast, 3 ♂, 1 ♀, Zeller & Leech Colls.; Brittany, Plonharnel (*de Joannis*), 2 ♂, 2 ♀. *Exp.* 42 millim.

Larva. On grasses growing on the sand-hills, feeding exclusively on those which grow at the summits of the hills (*de Joannis*).

*274. Euxoa rugifrons. (Plate LXI. fig. 3.)

Agrotis rugifrons, Mab. Bull. Soc. Ent. Fr. 1888, p. 42; Staud. Cat. Lep. pal. p. 152.

♂. Head and thorax pale rufous; tegulæ with black medial line; abdomen ochreous white. Fore wing rufous, the costal area pale; the subbasal line represented by a black spot below median nervure; the antemedial line obsolete on costal area, excurved in interspaces and defined by pale colour on inner side; claviform defined by black, elongate, narrow, with an oblique pale streak from its extremity; orbicular and reniform defined by black, the former oblique, elliptical, open above, the latter with pale centre; postmedial line indistinct, reduced to a series of small dentate marks, bent outwards below costa, excurved to vein 4, then oblique; subterminal line pale, angled outwards at vein 7 and excurved at middle, defined by some dark points on its inner side at middle; a terminal series of dark points. Hind wing ochreous white with rufous terminal line, the cilia white; the underside with the costal area irrorated with rufous, a slight discoidal point and traces of postmedial line.

Hab. Tunis, Gabes, type † ♂ in Coll. Mabille. *Exp.* 34 millim.

*275. Euxoa bœtica.

Heliophobus bœtica, Boisd. Icones, pl. 74. f. 6 (1830); Herr.-Schäff. Schmett. Eur., Noct. f. 23; Staud. Cat. Lep. pal. p. 176.

Head and thorax yellowish; tegulæ and patagia with dark edges, the former with dark medial line; abdomen whitish. Fore wing yellowish, the costal, inner, and terminal areas tinged with bluish

grey, the disk suffused with rufous ; a black streak below base of cell ; the antemedial line obsolete on costal area, angled outwards below cell and more strongly above inner margin ; claviform large, defined by black ; orbicular and reniform small, defined by black, the former round ; postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique ; subterminal line pale, defined by a series of dentate black marks before it, angled outwards at vein 7 and excurved at middle ; a terminal series of black points and a series on the cilia. Hind wing white, the veins slightly tinged with brown ; traces of a diffused brown postmedial line on costal half ; a terminal series of points.

Hab. Spain, S.W. Coasts. *Exp.* 38 millim. This species is unknown to me.

*276. Euxoa pierreti. (Plate LXI. fig. 4.)

Episema pierretii, Bugnion, Ann. Soc. Ent. Fr. 1837, p. 441, pl. 16. f. 3 ; Staud. Cat. Lep. pal. p. 177.
Heliophobus marsdeni, Baker, Trans. Ent. Soc. 1894, p. 40, pl. i. f. 9.

♂. Head and thorax whitish and pale rufous ; patagia with white line followed by black scales round edges ; tarsi ringed with fuscous ; abdomen whitish, with ochreous dorsal bands. Fore wing ochreous white suffused with pale rufous, the veins brown defined by whitish ; subbasal line double, waved, interrupted in cell ; antemedial line double, angled outwards below costa, oblique to submedian fold, then waved ; claviform defined by black ; orbicular small, round, white, defined by black ; reniform grey, defined by white and black at sides only ; postmedial line defined by whitish on outer side, dentate, strongly bent outwards below costa, slightly angled inwards in discal fold, oblique below vein 4 ; subterminal line whitish, defined on inner side by dentate dark marks, angled outwards at vein 7 and dentate on veins 4 and 3 ; a terminal series of small dark lunules. Hind wing white, the veins and terminal half suffused with brown ; the underside with small discoidal spot and curved postmedial line.

Hab. Egypt, Alexandria, type † ♂ *marsdeni* in Coll. Baker. *Exp.* 30 millim.

*277. Euxoa lansarotensis. (Plate LXI. fig. 5.)

Agrotis lanzarotensis, Rebel, Ann. Nat. Hofm. ix. p. 52, pl. i. f. 5 (1894) ; Staud. Cat. Lep. pal. p. 147.

♂. Antennæ rufous ; head white mixed with rufous ; tegulæ rufous tipped with white and with black medial line ; thorax white, slightly mixed with rufous, and the patagia edged with rufous ; abdomen white tinged with rufous. Fore wing white, the costal, inner, and terminal areas slightly tinged with brown ; an oblique black striga below base of cell ; the subbasal line represented by a black point below costa ; the antemedial line obsolete except in submedian interspace, where it is black and angled outwards ; claviform moderate, pale rufous defined by black ; orbicular small, round,

with brown centre and white annulus defined by brown; reniform greyish, with some black scales before and beyond it and some pale rufous between it and orbicular; postmedial line fine, dentate, blackish, bent outwards below costa, excurved to vein 4, then oblique, some pale points beyond it on costa; subterminal line whitish, angled outwards at vein 7 and dentate at veins 4 and 3; a terminal series of black points. Hind wing white, the veins and costal area tinged with brown, a brown terminal line, the underside with the costal area irrorated with brown.

Hab. Canaries, Lanzarote I., type † ♂ in Mus. Vienna. *Exp.* 34 millim.

278. Euxoa trifida.

Noctua trifida, F. de Waldh. Ent. Imp. Ross. i. p. 200, pl. 5. f. 6 (1820).
Agrotis rogneda, Staud. Berl. e. Zeit. 1870, p. 113; Mill. Icon. iii. p. 395, pl. 149. f. 14; Staud. Cat. Lep. pal. p. 154.

♂. Head and thorax ochreous white tinged with brown and fuscous; abdomen white, dorsally tinged with brownish ochreous. Fore wing brownish ochreous irrorated with black; the veins streaked with white; the subbasal line represented by black striæ from costa and median nervure; the antemedial line waved, black; claviform elongate, defined by black; orbicular and reniform large, ochreous, with black-irrorated centres and defined by black, the former round; the postmedial line waved, bent outwards below costa, incurved in discal fold, and very oblique below vein 4; the subterminal line whitish, defined by black suffusion on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; cilia white, with a black line through them. Hind wing pure white, with fine brown terminal line; the underside with slight brown irroration and curved postmedial line on costal area only.

Hab. Spain, Valladolid; S. Russia, Crimea, Sarepta, 2 ♂; Asia Minor, Pontus. *Exp.* 36 millim.

Sect. II. Antennæ of male bipectinate with moderate branches, the apical third serrate.

A. Female with the wings partially aborted.

279. Euxoa fatidica.

Noctua fatidica, Hübn. Samml. Eur. Schmett., Noct. f. 704 (1827); Herr.-Schäff. Schmett. Eur. ii. pl. 89. f. 456; Staud. Cat. Lep. pal. p. 153.
Hadena bombycia, Ev. Bull. Mosc. ii. p. 632 (1851); id. iii. p. 110, pl. 2. f. 9 (1856).

♂. Head and thorax grey mixed with dark brown; palpi blackish at sides; tegulæ with black medial line, patagia edged with brown; pectus and legs mostly black-brown; abdomen dorsally pale brown, ventrally black-brown. Fore wing pale red-brown; the veins defined by grey streaks; the subbasal line represented by black

strigæ from costa and cell, the antemedial by a black striga from costa and a line from cell to inner margin, excurved in submedian interspace and very strongly dentate above inner margin; claviform elongate, defined by black; orbicular and reniform small, defined by black, the former produced on outer side, the latter with dark streaks in the interspaces from it to the postmedial line, which is minutely dentate, bent outwards below costa, excurved to vein 4, then oblique, the subterminal line indistinct, dentate outwards at veins 7, 6, 4, 3, and defined by dentate brown marks on its inner side; a terminal series of black points; cilia pale, with a dark line through them. Hind wing pale fuscous brown; the cilia pale, with a brown line through them; the underside with discoidal spot and indistinct curved postmedial line.

♀. Grey-brown to dark brown; the wings reduced to about two-thirds length; the markings of fore wing less prominent.

Ab. 1. *bombycia*. Much darker; fore wings fuscous black; hind wings grey-black.—Siberia, Mongolia.

Hab. France, Pyrenees; Switzerland, Zeller and Frey Colls.; Norway; Russia, Urals; Armenia, Caucasus; W. Siberia, Altai; Mongolia. *Exp.*, ♂ 46, ♀ 24–32 millim.

Larva. Mill. Ann. Soc. Linn. Lyon, (2) xix. p. 44, pl. 112. ff. 5-8.

Young stages: clear ochreous. Adult: blue-green, darker on dorsum; warts and stigmata black, each with a single hair; lines almost obsolete; thoracic shield black; head reddish yellow with lateral black fasciæ. Food-plant, grasses.

B. (*Scotia*). Female with the wings fully developed.
- *a*. Fore wing with dark fascia below base of cell confluent with the claviform.
  - a^1. Hind wing white.
    - a^2. Fore wing blue-grey with rufous in discal and submedian folds ..... *endogæa*.
    - b^2. Fore wing brownish grey without rufous in discal and submedian folds ..... *sabulosa*.
  - b^1. Hind wing suffused with fuscous.
    - a^2. Fore wing with short blackish marks in interspaces beyond lower angle of cell ..... *arenivolans*.
    - b^2. Fore wing with black streaks in interspaces beyond the cell ..... *chretieni*.
- *b*. Fore wing without dark fascia below base of cell.
  - a^1. Hind wing with dark patch on apical area on underside.
    - a^2. Fore wing with the veins prominently defined by white streaks ..... *repanda*.
    - b^2. Fore wing with the veins not prominently defined by white streaks.
      - a^3. Fore wing with the orbicular elongate, elliptical. *radians*.
      - b^3. Fore wing with the orbicular rounded.
        - a^4. Fore wing with the cell dark between the stigmata ..... *infusa*.
        - b^4. Fore wing with the cell between the stigmata not darker than the ground-colour. *porphyricollis*.
  - b^1. Hind wing without dark patch on apical area on underside.
    - a^2. Hind wing white, the terminal area more or less tinged with brown in female only.

a^3. Fore wing with the orbicular lanceolate.
a^4. Tegulæ blackish at tips ..... *longidentifera.*
b^4. Tegulæ brown, with medial black line ..... *interjectionis.*
b^3. Fore wing with the orbicular rounded.
a^4. Head, thorax, and fore wing more or less brown, the stigmata defined by blackish . *segetis.*
b^4. Head, thorax, and fore wing grey-white, the stigmata indistinctly defined ..... *subalba.*
b^2. Hind wing more or less suffused with brown, especially in female.
a^3. Fore wing with the median veins prominently defined by whitish streaks.
a^4. Fore wing with the veins below apex defined by whitish streaks.
a^5. Fore wing with the orbicular well-developed, rounded ..... *robusta.*
b^5. Fore wing with the orbicular small and produced on outer side..... *trifurcula.*
b^4. Fore wing with the veins below apex not clearly defined by whitish streaks.
a^5. Fore wing with the claviform large and clearly defined ..... *vestigialis.*
b^5. Fore wing with the claviform narrow and rather obscure ..... *trifurca.*
b^3. Fore wing with the median veins not defined by whitish streaks.
a^4. Fore wing with the postmedial line almost obsolete ..... *ruta.*
b^4. Fore wing with the postmedial line well developed.
a^5. Fore wing with the orbicular well defined.
a^6. Fore wing with prominent brown striæ. *corticea.*
b^6. Fore wing with dark irroration.
a^7. Fore wing reddish brown, the orbicular large, round.
a^8. Fore wing with the claviform large, rounded ..... *cinchonina.*
b^8. Fore wing with the claviform narrow, elongate..... *edictalis.*
b^7. Fore wing greyish, the orbicular small, elliptical ..... *admirationis.*
c^7. Fore wing greenish grey, the lines and stigmata rather indistinct..... *ceropachoides.*
b^5. Fore wing with the orbicular quite or almost obsolete.
a^6. Fore wing with the postmedial line dentate ..... *cinerea.*
b^6. Fore wing with the postmedial line not dentate..... *crassilinea.*

280. Euxoa endogæa.

Agrotis endogæa, Boisd. Icones, pl. 75. f. 5 (1832); Staud. Cat. Lep. pal. p. 147.
Agrotis arenicola, Staud. Berl. ent. Zeit. 1870, p. 109; Mill. Icones, pl. 146. f. 6.

♂. Head and thorax white mixed with ochreous; abdomen whitish. Fore wing whitish tinged with blue-grey, and with ochreous in base of submedian interspace and in and beyond the cell; the costa fuscous, with white spots at the lines and towards

apex; a black streak below base of cell confluent with the claviform which is defined by black; orbicular large, elongate elliptical, defined by black except above where it is open; reniform fuscous, defined by black and with white lunule on its inner edge; subterminal line only defined by slight dentate marks on its inner side towards costa and a dark mark beyond it between veins 6 and 4; a terminal series of black points. Hind wing pure white.

♀. Bluer grey; fore wing with large dentate black marks before subterminal line; hind wing suffused with grey towards termen.

Hab. Corsica; Sardinia, 1 ♂. *Exp.*, ♂ 34, ♀ 36 millim.

*281. Euxoa sabulosa.

Agrotis sabulosa, Rmbr. Faun. And. pl. 17. f. 3 (1839); Staud. Cat. Lep. pal. p. 147.

♂. Head and thorax grey-brown mixed with white; tegulæ with black medial line; abdomen white tinged with ochreous towards extremity. Fore wing brownish grey, suffused in parts with rufous and fuscous, the veins streaked with black; the costal area fuscous with pale points at the lines and towards apex; an irregular black streak below base of cell; antemedial line represented by an excurved portion in submedian interspace; claviform large, filled in with black, rounded at extremity; orbicular and reniform black with grey annuli, the former produced on outer side; the cell between them black; subterminal line only defined on inner side by a series of small dentate black marks; a blackish patch before termen between veins 7 and 4, and a terminal series of small black lunules. Hind wing pure white.

Hab. Spain, Andalusia, in Coll. Oberthur. *Exp.* 42 millim.

282. Euxoa arenivolans. (Plate LX. fig. 5.)

Agrotis arenivolans, Butl. Ent. Mo. Mag. xv. p. 269 (1879).

Head and thorax dark brown and grey-white; tegulæ with black medial line; patagia grey, edged with dark brown above; abdomen grey, dorsally tinged with brown except at base. Fore wing grey-white, the veins with fine black streaks; a dark brown fascia on costa; a black-brown fascia below the cell from base to beyond middle, attenuate at extremities; a short black fascia above inner margin near base and a narrow fascia on inner margin from middle to tornus; the lines obsolete; orbicular and reniform with brown centres and grey annuli defined by black, the former small, produced on outer side, sometimes met by a tooth from inner side of reniform; the cell just before and between the stigmata dark brown; elliptical dark brown spots above bases of veins 2, 3, 4, and 6; the subterminal line only defined by the area beyond it being black-brown, dentate to termen at veins 7, 4, 3, 2, and 1; a terminal series of black points. Hind wing dark brown, the interspaces somewhat pale towards base in male; cilia pale, with a brown line through

them ; the underside white, the costal and terminal areas irrorated with brown ; a black discoidal spot.

Hab. Hawaii, Maui (*Blackburn*), 1 ♂, 1 ♀ type, Kona (*Perkins*), 1 ♂. *Exp.* 42–46 millim.

*283. Euxoa chretieni. (Plate LXV. fig. 2.)

Euxoa chretieni, Dumont, Bull. Soc. Ent. Fr. 1903, p. 83.

♀. Head and thorax dark brown mixed with grey ; palpi black except towards tips ; tegulæ with black medial line ; abdomen dark brown slightly mixed with grey. Fore wing dark brown irrorated with whitish ; a black streak below base of cell confluent with the claviform, which is rather small and elongate ; antemedial line only developed between cell and vein 1 where it is angled outwards, black ; orbicular obsolete ; reniform brownish, with blackish centre and defined by black, rather diamond-shaped ; a series of black streaks beyond the cell between veins 6 and 2 extending to the subterminal line ; the postmedial line represented by a series of small vitta-shaped black marks forming a **W**-mark in submedian interspace ; the area beyond the subterminal line greyer ; a terminal series of black points. Hind wing fuscous brown, with blackish terminal line ; the underside greyer, with slight discoidal spots and sinuous postmedial line.

Hab. Spain, Cataluna, La Granja, type † ♀ in Coll. Dumont. *Exp.* 42 millim.

284. Euxoa repanda. (Plate LX. fig. 6.)

Agrotis repanda, Wlk. xi. 742 (1857).

Head and thorax grey-white and dark brown ; palpi with lateral blackish patch ; tegulæ brown at base and with black medial line ; tarsi banded with black ; abdomen whitish, dorsally tinged with brown. Fore wing brown ; the veins black, defined by white streaks on each side of them, less distinctly so towards costa ; the subbasal line represented by black strigæ from costa and median nervure, defined by white on outer side ; the antemedial line black, defined by white on inner side, acutely dentate outwards below costa, angled inwards on median nervure, excurved in submedian interspace and dentate outwards to middle of wing above inner margin ; claviform elongate, defined by black ; orbicular and reniform with brown centres and pale annuli defined by black, the former produced on outer side, the cell between the stigmata and a patch beyond the reniform black-brown ; the postmedial line represented by double black striæ on costa and an incurved waved maculate line on its inner edge from vein 5 to inner margin ; the subterminal line indistinct, pale, defined by a series of dentate black marks on its inner edge and dentate outwards to termen at veins 7, 4, 3, 2 ; a terminal series of black points. Hind wing dark brown ; the interspaces of basal half whitish in male ; the underside white, with large apical black patch, more or less fuscous on termen, and fine terminal black line.

Hab. Victoria (*Bakewell*), 1 ♂, 1 ♀ type; Tasmania, 1 ♂. *Exp.*, ♂ 44, ♀ 50 millim.

285. Euxoa radians. (Plate LX. fig. 7.)

Agrotis radians, Guen. Noct. i. p. 261 (1852).
Agrotis munda, Wlk. x. 348 (1856).
Mamestra basinotata, Wlk. xv. 1686 (1858).
Agrotis turbulenta, Wlk. xxxii. 703 (1865).
Agrotis injuncta, Wlk. xxxii. 703 (1865).
Agrotis scapularis, Feld. Reis. Nov. pl. 110. f. 13 (1874).

Head and thorax reddish brown mixed with white; tegulæ with dark medial line; abdomen pale ochreous suffused with fuscous, the ventral surface whitish irrorated with brown, the anal tuft rufous; tarsi banded with black. Fore wing brown mixed with white especially towards costa, on which is a series of small black spots; the veins with dark streaks, the median nervure and vein 1 defined on each side by white; a curved subbasal line from costa to submedian fold, interrupted in cell; a curved double antemedial line between median nervure and vein 1 filled in by whitish; claviform elongate, dark brown defined by black; orbicular and reniform with fuscous centres, whitish annuli and black outline, the former small, elliptical, the latter well developed and with the cell between the stigmata dark brown; the postmedial line very indistinct, minutely waved, bent outwards below costa, excurved to vein 4, then oblique; the terminal area much browner; the subterminal line prominent and white or very indistinct, dentate, with a series of dentate blackish marks before it and streaks in the interspaces beyond it ending in the terminal series of small black lunules; cilia pale, with two fine brown lines through them. Hind wing semihyaline white, the costal and inner areas tinged with ochreous; the veins brownish, the termen suffused with fuscous, narrowing from costa to a point at vein 2; cilia white, fuscous at apex. Underside of fore wing white, with small discoidal lunule and the terminal area suffused with fuscous; hind wing with rounded apical black patch.

♀. Usually suffused with fuscous, the markings obscure.

Hab. Queensland, Brisbane (*Turner*), 1 ♂, 1 ♀; W. Australia, Sherlock R. (*Clements*), 2 ♂, 2 ♀; N. S. Wales, Hunter R. (*Purser*), 1 ♀, Moreton Bay (*Diggles*), 3 ♀ types *basinotata* and *turbulenta*, Sydney (*Mathew, Raynor*), 5 ♂, 4 ♀; Victoria, Gisborne (*Lyell*), 1 ♂; S. Australia, Adelaide (*Wilson, Bakewell*), 1 ♂, 1 ♀, type *munda* and type *injuncta*; Tasmania, 1 ♀; Friendly Is. (*Brenchley*), 1 ♂; N. Zealand, 1 ♂; Norfolk I. (*Mathew*), 1 ♂. *Exp.* 36–44 millim. Type † ♂ in Mus. Paris, type † ♀ *scapularis* in Coll. Rothschild.

286. Euxoa infusa. (Plate LX. fig. 8.)

Noctua infusa, Boisd. Voy. de l'Astrolabe, Lép. p. 240 (1835).
Agrotis cordata, Wlk. xi. 741 (1857).
Agrotis aenituma, Wlk. xxxii. 701 (1865).

♂. Head and thorax brown, irrorated with a few black scales, the hairs tipped with grey; tarsi banded with black; abdomen grey-

brown, dorsally tinged with fuscous, ventrally paler with sublateral series of black spots. Fore wing grey-brown irrorated with black; the subbasal line represented by double striæ from costa; the antemedial line double, waved, acutely angled inwards on median nervure, then sharply outwards above inner margin; claviform usually present, defined by black; orbicular and reniform small, with fuscous centres and whitish annuli defined by black, the former round, the cell before and between them black; a dentate black mark beyond the latter; the postmedial line double, dentate, and produced to points on the veins, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale, defined by indistinct dentate brown marks on its inner side, the area beyond it dark, angled outwards at vein 7 and dentate at veins 4 and 3; a terminal series of black points. Hind wing white, the veins, apical area and termen fuscous brown; the underside with prominent apical patch.

Hab. Australia, 1 ♂ type, *cordata*; N. S. Wales (*Raynor*), 2 ♂; Victoria; New Hebrides, Aneiteum, 1 ♂ type *aneituma*. *Exp.* 40–44 millim.

Larva. Frogatt, Agric. Gaz. N. S. Wales, x. p. 1252 (1900).

Smooth, hairless, varying from pale olive-green to dull black and with lateral stripes. Food-plants: grasses, *Trifolium*, etc.

This is the edible "Bugong Moth," the perfect insect being roasted and eaten in large numbers by the natives.

287. Euxoa porphyricollis. (Plate LX. fig. 9.)

Agrotis porphyricollis, Guen. Noct. i. p. 259 (1852).
Perigea albinasus, Wlk. x. 276 (1856).
Agrotis rubrilinea, Wlk. x. 351 (1856).
Agrotis recondita, Wlk. x. 351 (1856).
Agrotis dorsicinis, Wlk. xv. 1701 (1858).
Graphiphora lapidosa, Wlk. xv. 1707 (1858).
Spælotis pectinata, Wlk. xxxiii. 707 (1865).
Elegarda orthosioides, Wlk. xxxiii. 712 (1865).
Tetrapyrgia graphiphorides, Wlk. xxxiii. 712 (1865).
Elegarda summa, Wlk. xxxiii. 713 (1865).
Hadena albipalpis, Wlk. xxxiii. 741 (1865).
Agrotis baueri, Feld. Reis. Nov. pl. 110. f. 10 (1874).

Head and thorax bright rufous or dark brown more or less strongly mixed with grey; palpi blackish at sides, whitish in front and at tips; pectus and legs mostly grey, the tarsi banded with black; abdomen grey, dorsally suffused with fuscous, ventrally irrorated with brown. Fore wing bright or pale rufous, or grey, more or less strongly irrorated and striated with dark brown and often suffused with fuscous; a double minutely waved subbasal line from costa to submedian fold; a double antemedial line angled outwards below costa and above inner margin; claviform small, or minute, blackish; orbicular and reniform with blackish centres and obscure outline, the former very small, the latter with brown striæ from costa above it and indistinct waved line from it to inner margin; the postmedial line minutely dentate, often indistinct, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line only

defined by fuscous on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pale, suffused with fuscous brown except in interspaces towards base; cilia pale with a brown line through them; the underside white, slightly irrorated with brown, a dark discoidal spot, a sinuous postmedial line with the area beyond it more or less suffused with fuscous and with large black apical patch.

Hab. Australia, 1 ♂ type *rubrilinea*, 1 ♀ type *albinasus*; Queensland, Brisbane (*Turner*), 3 ♂, 3 ♀; N. S. Wales, Moreton Bay (*Diggles*), 6 ♂, 1 ♀, types *dorsicinis*, *albipalpis*, *pectinata*, and *orthosioides*, Sydney (*Raynor*, *Rietmann*), 13 ♂, 4 ♀; Victoria, Gisborne (*Lyell*), 2 ♂, 1 ♀, Melbourne (*Lucas*), 1 ♂; Tasmania, 2 ♂, 1 ♀, types *recondita*, *graphiphorides*, and *summa*. *Exp.* 32–46 millim. Type † in Mus. Paris; type † ♀ *lapidosa* in Mus. Oxon.

288. **Euxoa longidentifera**, n. sp. (Plate LX. fig. 10.)

Head and thorax red-brown, more or less strongly mixed with grey and black; palpi blackish at sides; pectus with some white hair; abdomen white, more or less strongly tinged on dorsum with ochreous or fuscous and ventrally irrorated with fuscous. Fore wing grey-brown tinged with fuscous, sometimes purplish grey or rufous, the costal area suffused with fuscous; an indistinct waved subbasal line from costa to submedian fold; a double waved antemedial line acutely angled outwards below costa and very strongly above inner margin; claviform elongate, fuscous defined by black; orbicular and reniform with fuscous centres, and grey annuli defined by black, the former produced to a point on outer side, the latter moderate; the postmedial line double, dentate, bent outwards below costa, excurved to vein 4, then incurved; an indistinct pale subterminal line angled outwards at vein 7 and excurved at middle, with a series of small dentate brown marks on its inner side, the area beyond it usually darker; a terminal series of black points. Hind wing white; female with the veins and margins tinged with brown.

Hab. Br. E. Africa, Muthambi (*Crawshay*), 1 ♀, Machakos (*Crawshay*), 1 ♂, Kikuyu (*Betton*), 1 ♂ type; Mashonaland, Salisbury (*Marshall*), 1 ♂; Natal, Estcourt (*Hutchinson*), 3 ♂, 5 ♀, Durban (*Gooch*), 1 ♂; Basutoland, Maseru (*Crawshay*), 2 ♂; Madagascar, Diego Suarez. *Exp.*, ♂ 34, ♀ 40 millim.

289. **Euxoa interjectionis.** (Plate LX. fig. 11.)

Agrostis interjectionis, Guen. Noct. i. p. 281 (1852).
Agrostis orbicularis, Wlk. xxxii. 700 (1865).
Agrostis significans, Wlk. xxxii. 700 (1865).

♂. Pale grey-brown; sides of palpi and frons dark brown; tegulæ with black medial line; abdomen white. Fore wing with the basal area tinged with fuscous brown on basal half; a pale subbasal line from costa to submedian fold; a dark antemedial line defined by whitish on inner side, slightly angled inwards at median

nervure and obsolete towards inner margin; claviform large, dark brown with black outline; orbicular elongate, elliptical, with brown centre, pale annulus, and black outline; reniform brown, with dark centre and black outline, the cell between the stigmata dark brown; postmedial line formed by minute dark striæ on the veins, bent outwards below costa, excurved to vein 4, then oblique; subterminal line indistinct, pale, dentate at veins 7, 4, 3, 2, and with short dark streaks before it at middle; a terminal series of dark points; cilia yellowish brown, with two fine dark lines through them. Hind wing semihyaline white.

♀. Head, thorax, and fore wing uniformly tinged with fuscous; hind wing with the costal and inner areas tinged with brown.

Hab. Perak; Java (*Horsfield*), 2 ♂ type *significans*, 3 ♀ type and type *orbicularis*, Samarang (*Meijer*), 1 ♂; N. Australia, Pt. Darwin, 2 ♂. *Exp.*, ♂ 34, ♀ 40 millim.

290. Euxoa segetis.

Noctua segetum, Schiff. Wien. Verz. pp. 81, 252, ff. 3 *a*, *b* (1776); Hübn. Eur. Schmett., Noct. f. 147; Hmpsn. Moths Ind. ii. p. 181; Staud. Cat. Lep. pal. p. 151.
Noctua præcox, Hübn. Eur. Schmett., Noct. f. 359 (1827), nec Linn.
Noctua fervida, Hübn. Eur. Schmett., Noct. f. 711 (1827).
Agrotis sicula, Boisd. Gen. et Ind. Meth. p. 109 (1840).
Agrotis dimidia, Zell. Isis, 1847, p. 439.
Agrotis sicania, Guen. Noct. i. p. 275 (1852).
Agrotis marginalis, Wlk. x. 339 (1856).
Agrotis obliviosa, Wlk. x. 340 (1856).
Agrotis aversa, Wlk. x. 345 (1856).
Agrotis correcta, Wlk. x. 345 (1856).
Agrotis denticulosa, Wllgrn. Wien. ent. Mon. iv. p. 168 (1860).
Agrotis conspurcata, Wlk. xxxii. 696 (1865); Moore, Lep. Ceyl. iii. pl 147. f. 7 *a*.
Agrotis repulsa, Wlk. xxxii. 696 (1865).
Agrotis certificata, Wlk. xxxii. 697 (1865).
Agrotis ingrata, Butl. A. M. N. H. (5) i. p. 162 (1878); id. Ill. Het. B. M. ii. p. 27, pl. 29. f. 9.
Agrotis pallida, Stgr. Stett. ent. Zeit. 1881, p. 423.
Agrotis fucosa, Butl. Tr. Ent. Soc. 1881, p. 179.
Agrotis lassa, Swinh. P. Z. S. 1886, p. 444.

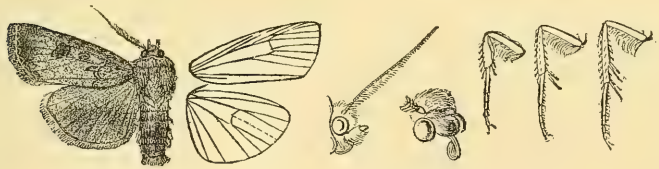


Fig. 59.—*Euxoa segetis*. ♂. ½. (From Moths Ind vol ii.)

♂. Head and thorax pale brownish ochreous slightly irrorated with black; palpi brown at sides; antennæ brown; tarsi banded with fuscous; abdomen whitish tinged with brown. Fore wing pale brownish ochreous striated with brown; a double fuscous subbasal line from costa to submedian fold interrupted at cell;

a double waved antemedial line, the outer stronger; claviform elongate, usually small, outlined with black; orbicular and reniform defined by black and with brownish centres, the former small or large, round or somewhat elliptical, the latter usually well-developed; an oblique medial shade from lower angle of cell to inner margin; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line indistinct, pale, defined by brown on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing semihyaline white, the veins, costa, inner margin, and termen tinged with brown; the underside with the costal area irrorated with brown and crossed by a postmedial striga.

Specimens are often tinged with reddish brown or fuscous.

♀. Nearly always darker and suffused with reddish brown or fuscous; fore wings sometimes fuscous black, the markings obscured.

Ab. 1. *pallida*. Ground-colour grey-white; the markings of fore wing indistinct.—C. Asia; Amur.

Hab. Britain; France; Germany, Zeller Coll.; Switzerland, Frey Coll.; Spain, Zeller Coll.; Sicily, Zeller Coll.; S. Russia, Sarepta, Zeller Coll.; Syria, Zeller & Leech Colls., The Lebanon (*Mrs. Nicholl*), 1 ♀; Madeira (*Leech*), 1 ♀; Canaries, 2 ♂, 1 ♀; Socotra (*Grant*), 1 ♂, 1 ♀; Br. E. Africa, Munisu (*Ld. Delamere*), 1 ♂, Muani (*Betton*), 1 ♀; Mashonaland, Salisbury (*Marshall*), 1 ♂, 2 ♀; Natal, Estcourt (*Hutchinson*), 2 ♂, 1 ♀; Basutoland, Maseru (*Crawshay*), 1 ♂, 1 ♀, Mahalishoek, 1 ♀; C. Colony (*A. Smith, Drège*), 1 ♂ type *obliviosa*, 3 ♀ type *marginalis*; E. Turkestan, Kuldja, 1 ♂, 1 ♀; Amur, 1 ♂, 2 ♀; Japan, Yokohama (*Jonas*), 3 ♀ type *ingrata*, (*Manley*) 1 ♂, 1 ♀, Yat Zuchiro (*Lewis*), 1 ♂, 1 ♀, Kiushu, 2 ♂, Gifu (*Pryer*), 1 ♂, Nikko (*Leech*), 1 ♀, Tokio (*Maries*), 3 ♂, 2 ♀ type *fucosa*; Corea, Gensan (*Ito*), 1 ♀; N. China, Shanghai, 1 ♂ type *certificata*; Namoa I. (*J. J. Walker*), 1 ♂; W. China, Ta-chien-lu, 1 ♂, 2 ♀, Chia-kou-ho, 1 ♀, Chang-yang, 2 ♀ (*Pratt*); Afghanistan, Dubrai (*Swinhoe*), 1 ♀; Kashmir, Narkunda, 1 ♂, 1 ♀, Kuijar, 1 ♂, Nubra, 1 ♂, 1 ♀, Barra Larcha, 1 ♂, 1 ♀ (*McArthur*), Dugi Pass (*Thompson*), 1 ♀, Dras, 1 ♀, Kiris, 1 ♂, Scinde Valley, 1 ♀, Goorais Valley, 1 ♀ (*Leech*); N.W. Himalayas, Murree (*Harford*), 2 ♂, 1 ♀, Rawal Pindi, 1 ♂, Cambellpur, 1 ♂, Thundiani, 2 ♂, 2 ♀ (*Yerbury*), Sultanpur (*G. Young*), 1 ♀, Simla, 2 ♂, 1 ♀ (*Hearsey*), type *aversa*, Dharmsála (*Hocking*), 4 ♂, 8 ♀; N. India (*Boys*), 1 ♀ type *correcta*, Dehra Dhun, 1 ♀; Sikhim (*Dudgeon*), 1 ♂; Bombay, Mhow (*Swinhoe*), 1 ♀ type *lassa*; Nilgiris (*Hampson*), 2 ♂, 3 ♀; Coimbatore (*Walhouse*), 1 ♀ type *repulsa*. *Exp.* 30–46 millim.

Larva. Meyr. Brit. Lep. p. 91; Barrett, Lep. Brit. iii. p. 291, pl. 125. f. 1.

Pale grey or greyish ochreous, sometimes tinged with pink; dorsal, subdorsal, and spiracular lines usually defined by dark edges, the subdorsal sometimes grey; head pale, with two brown marks; thoracic plate more or less brownish. Food-plant: roots of *Brassica, Rumex, Chrysanthemum*, etc. 7–4.

291. Euxoa subalba.

Agrotis subalba, Wlk. x. 339 (1856).
Agrotis nivalis, Feld. Reis. Nov. pl. 110. f. 11 (1874).

♂. Head and thorax grey-white, irrorated with brown and black scales; tarsi banded with black; abdomen white, dorsally tinged with brown, and with sublateral series of black spots. Fore wing pale grey, irrorated and striated with fuscous; the subbasal line represented by double striæ from costa; the antemedial line indistinct, double, waved, slightly angled outwards below costa and above inner margin; traces of the claviform sometimes present; the orbicular and reniform with indistinct very incomplete outlines, and sometimes with fuscous centres; the postmedial line very indistinct, excurved from costa to vein 4, then oblique; the subterminal line sometimes defined by blackish spots before it on costa, then beyond it; a terminal series of black points. Hind wing pure white, with some dark lunules or points on termen except towards tornus; the underside with the costal area irrorated with brown.

Hab. C. Colony (*Drège*), 1 ♂ type, Capetown (*Trimen*), 2 ♂. *Exp.* 36–42 millim.

292. Euxoa robusta. (Plate LX. fig. 12.)

Agrotis robusta, Ev. Bull. Mosc. 1856, ii. p. 205; Staud. Cat. Lep. pal. p. 153.
Agrotis trifurca, Herr.-Schäff. Eur. Schmett., Noct. f. 120, nec Ev.

♂. Dark red-brown mixed with grey; tegulæ with a black line near extremities; patagia mostly grey; pectus, legs, and abdomen dark brown. Fore wing dark red-brown, the veins defined by white streaks; costa black towards base; the subbasal line double, black, filled in with grey, waved from costa to submedian fold; the antemedial line similar, angled outwards below costa and strongly above inner margin; claviform elongate, defined by black; orbicular and reniform with brown centres and grey annuli defined by black, the former round; the postmedial line black, defined by grey on outer side, minutely dentate, slightly bent outwards below costa, excurved to vein 4, then oblique; the subterminal line grey, dentate, and with a series of dentate black marks on its inner side; a terminal series of small black spots; a fine pale line at base of cilia. Hind wing fuscous brown, the cilia pale with a dark line through them; the underside grey, with black discoidal spot and curved dentate postmedial line.

Hab. Russia, Urals; W. Siberia, Altai; Mongolia, Urga, 1 ♂. *Exp.* 26 millim.

293. Euxoa trifurcula.

Agrotis trifurcula, Staud. Iris, v. p. 362, pl. 3. f. 6 (1892); id. Cat. Lep. pal. p. 153.

♂. Head and thorax dark brown mixed with grey and black; tegulæ with black medial line, the extremities grey; patagia mostly

grey; abdomen dark red-brown. Fore wing dark red-brown; the veins defined by white streaks; the costa black towards base; the subbasal line double, black filled in with grey, waved from costa to submedian fold; the antemedial line similar, angled outwards below costa and strongly above inner margin; claviform elongate defined by black; orbicular and reniform with brown centres and grey annuli defined by black, the former produced on outer side; postmedial line black, defined by grey on outer side, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line dentate, grey, with a series of dentate black marks on its inner side; a terminal series of black points. Hind wing fuscous brown; cilia white, with a brown line at base; the underside grey, with the terminal area suffused with brown, a black discoidal point and indistinct curved, minutely-dentate postmedial line.

Hab. Mongolia, Changai Mts., Urga, 1 ♂; Siberia, Kentei. *Exp.* 38 millim.

294. Euxoa vestigialis.

Noctua vestigialis, Rott. Naturf. viii. p. 107 (1776); Staud. Cat. Lep. pal. p. 152.
Noctua valligera, Gmel. Syst. Nat. i. 5, p. 2541 (1776); Schiff. Wien. Verz. p. 80 (1776); Hübn. Samml. Eur. Schmett., Noct. ff. 150, 478; Godt. Lép. Fr. v. p. 223, pl. 65. ff. 2, 3; Steph. Ill. Brit. Ent., Haust. iii. p. 118.
Noctua clavis, Esp. Schmett. iii. pl. 63. f. 5 (1782).
Noctua trigonalis, Esp. Schmett. iii. pl. 75. f. 6 (1782).

♂. Head and thorax white mixed with pale red-brown; palpi blackish at sides except at extremity; tarsi banded with black; abdomen white tinged with pale brown. Fore wing grey-white, sometimes tinged with ochreous or grey-brown, the interspaces streaked with pale red-brown; the subbasal line represented by double black striæ from costa and median nervure, the antemedial line by double striæ from costa and a double line from median nervure to inner margin, angled in submedian fold and more strongly above inner margin; claviform large, elongate, dark brown defined by black; orbicular and reniform with fuscous centres and whitish annuli defined by black, the former small, elongate, often conjoined to the latter, which is usually angled inwards on median nervure, some brown in the cell between the stigmata; the postmedial line minutely dentate, bent outwards below costa, angled inwards in discal fold and oblique below vein 4; the subterminal line dentate at veins 8, 7, 4, 3, defined by dentate black marks before its medial part, and the area beyond it dark; cilia brown, with a pale line through them. Hind wing white, the veins and terminal area tinged with brown; the underside with distinct discoidal spot and curved postmedial series of points on the veins.

♀. Darker; the hind wing wholly suffused with brown.

Ab. 1. Brownish white, with all the markings obsolescent.

Hab. Britain, Leech Coll.; France, Mutzell & Frey Colls.;

Denmark, Jutland; Germany, Mutzell & Zeller Colls.; Switzerland, Frey Coll.; Spain; Corsica; Italy; W. Siberia, Altai, Leech Coll., 2 ♂, 3 ♀. *Exp.* 32–44 millim.

Larva. Meyr. Brit. Lep. p. 90; Barrett, Lep. Brit. iii. p. 281, pl. 124. f. 1. Light greenish grey; dorsal line pale, dark-edged; lateral line pale or whitish, dark-edged; tubercles black; head pale ochreous with dark markings. Food-plants: grasses, *Gallium*, *Stellaria*, etc.

295. Euxoa trifurca. (Plate LX. fig. 13.)

Agrotis trifurca, Ev. Bull. Soc. Mosc. 1837, p. 31; Staud. Cat. Lep. pal. p. 153.

♂. Head and thorax black-brown mixed with white; tarsi banded with black; abdomen ochreous, dorsally tinged with brown, ventrally fuscous. Fore wing grey-white or pale brown, the costal area fuscous to the subterminal line, the interspaces streaked with black-brown, leaving the veins defined by whitish except towards costa; a double subbasal line from costa to vein 1 interrupted in cell; a double antemedial line, obsolete towards costa, excurved below submedian fold and angled outwards above inner margin; claviform elongate and defined by black; orbicular and reniform with black centres and pale annuli defined by black, the former small, elongate, elliptical; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line pale, dentate outwards at veins 7, 6, 4, 3, 2, and defined by dentate black marks on inner side and the area beyond it dark; a terminal series of black points. Hind wing yellowish white, the veins, costal and terminal areas suffused with fuscous brown; the underside with the costal area irrorated with brown, a black discoidal lunule.

Hab. Russia, Urals; W. Siberia, Altai; Tibet, Kuku Nor, Amdo; Siberia, Amur, 3 ♂. *Exp.* 48 millim.

296. Euxoa ruta.

Xylina ruta, Ev. Bull. Mosc. 1851, ii. p. 634; id. 1856, ii. p. 213, pl. 1. f. 5; Staud. Cat. Lep. pal. p. 151.

♂. Head and thorax grey mixed with brown; antennæ dark brown; legs blackish, with white rings at extremities of tibiæ and tarsal joints; abdomen ochreous tinged with pale fuscous. Fore wing grey irrorated with fuscous brown, the costal and terminal areas suffused with fuscous brown; the antemedial line indistinct, double, waved, almost obsolete on costal area; claviform elongate, defined by black; orbicular and reniform with fuscous centres and grey annuli defined by black, the former produced on outer side, the latter angled inwards on median nervure; the postmedial line barely traceable, bent outwards below costa, excurved to vein 4, then incurved; an indistinct dentate subterminal line. Hind wing fuscous brown, tinged with ochreous towards base and inner

margin; the underside pale, with the costal area grey irrorated with brown, a small black discoidal spot.

Hab. Mongolia, Changai Mts.; Siberia, Kentei, 1 ♂. *Exp.* 46 millim.

297. Euxoa corticea.

Noctua corticea, Schiff. Wien. Verz. 81. 13 (1776); Hübn. Samml. Eur. Schmett., Noct. f. 145; Godt. Lép. Fr. v. p. 250, pl. 68. ff. 3, 4; Steph. Ill. Brit. Ent., Haust. iii. p. 114; Hmpsn. Moths Ind. ii. p. 181; Staud. Cat. Lep. pal. p. 151.
Noctua sincera, Frr. Neu Beitr. Schmett. pl. 544. f. 2 (1852).
Noctua obscura, Frr. Neu Beitr. Schmett. pl. 628. ff. 1, 2 (1858).
Noctua transversa, Wlk. x. 354 (1856).
Agrotis fraterna, Moore, Lep. Atk. p. 116 (1882).
Agrotis amurensis, Staud. Rom. Mém. vi. p. 421 (1892).

♂. Head and thorax red-brown, more or less strongly mixed with grey; palpi blackish at sides, except at tips; tegulæ with black medial line; pectus and legs strongly mixed with black, the tarsi with pale rings; abdomen pale, strongly suffused with fuscous brown. Fore wing grey, more or less strongly tinged and striated with red-brown, or wholly red-brown; the costal area tinged with fuscous; a double waved subbasal line from costa to submedian fold; a double waved antemedial line; claviform outlined with black, elongate, and usually well-developed; orbicular and reniform with black centres and outline and pale annuli, the former usually small or moderate, round, the latter usually with its lower extremity more or less angled inwards on median nervure; the postmedial line double, minutely dentate, slightly bent outwards below costa, excurved close round outer side of reniform, then oblique; the subterminal line indistinct, pale, angled outwards at vein 7 and excurved at middle, with slight brown marks on its inner side; a terminal series of black points. Hind wing white or pale brown, the veins, costal and terminal areas darker brown; a fine dark terminal line and line at base of cilia; the underside with the costal area irrorated with brown, a small discoidal spot and curved postmedial line.

Ab. 1. Fore wing with the orbicular large, quadrate, open above.

Ab. 2. *obscura*. Darker; fore wing with the medial area usually suffused with black.

Hab. Britain, Leech Coll.; France, Sand Coll.; Germany, Mutzell & Zeller Colls.; Switzerland, Frey Coll.; Spain; Scandinavia; Armenia; W. Siberia, Altai; W. Turkestan; Kashmir, Narkundah (*McArthur*), 2 ♂, 2 ♀, Jalauri Pass, 1 ♂, Dana, 1 ♀, Kokser, 2 ♂, 2 ♀, Barra Larcha, 3 ♀; Kulu, Sultanpur, 3 ♂, 1 ♀, Simla (*Swinhoe*), 1 ♀, Thundiani (*Yerbury*), 2 ♂, 1 ♀, Dalhousie, 1 ♂, 1 ♀; Kangra, Dharmsála (*Hocking*), 5 ♂, 1 ♀; Sikhim (*Atkinson, Dudgeon*), 3 ♂, 1 ♀ type *fraterna*; Assam, Nagas; Nilgiris, (*Swinhoe*), 1 ♂; Madagascar, Betsileo (*Cowan*), 1 ♂; hab. ignotus, type ♀ *transversa*. *Exp.* 40–42 millim.

Larva. Meyr. Brit. Lep. p. 91; Barrett, Lep. Brit. iii. p. 295, pl. 126. f. 1. Rather rough; brownish grey with dark freckles; dorsal line

pale, dark-edged; subdorsal line pale, edged above with dark brown; subspiracular line pale, double; head marked with black. Food-plants: *Chenopodium*, *Rumex*, *Trifolium*, etc. 8–5.

*298. Euxoa cinchonina. (Plate LX. fig. 14.)

Agrotis cinchonina, Guen. Noct. i. p. 281 (1852).

♀. Head and thorax red-brown, mixed with dark brown; abdomen red-brown. Fore wing red-brown, suffused and irrorated with fuscous, especially on medial area; the subbasal line indistinct, double from costa to submedian nervure, slightly angled outwards below costa; the antemedial line double, waved, angled outwards below costa, and more strongly above inner margin; claviform defined by blackish, large, rounded; orbicular and reniform defined by blackish and with blackish centres, the former large, round; the postmedial line double, minutely waved, rather indistinct, bent outwards below costa, excurved to vein 4, then incurved; subterminal line defined by very slight dark suffusion, more distinctly at costa; a fine dark terminal line. Hind wing dark brown with a yellowish tinge; the underside paler with some dark irroration, a discoidal spot and curved postmedial series of striæ on the veins.

Hab. Abyssinia, type † ♀ in Mus. Paris. *Exp.* 34 millim.

299. Euxoa edictalis. (Plate LX. fig. 15.)

Carneades edictalis, Smith, Ent. News Philad. iv. p. 99, pl. vi. f. 3 (1893).

♂. Head and thorax reddish brown largely mixed with grey; palpi blackish at sides; tegulæ with slight dark medial line; abdomen grey irrorated with brown. Fore wing grey, suffused with reddish brown and irrorated with black; the subbasal line double, black, waved from costa to submedian fold; the antemedial line double, dentate, oblique; claviform small, outlined with black; orbicular and reniform outlined with black, the former round, the latter with some fuscous in its lower extremity, the area between them slightly tinged with black; the postmedial line strongly crenulate, bent outwards below costa, excurved to vein 3, then oblique; an indistinct dentate subterminal line; a terminal series of black points. Hind wing pale dusky brown, the discoidal lunule and terminal line darker.

Hab. U.S.A., Colorado, Glenwood Springs, 1 ♂. *Exp.* 40 millim.

300. Euxoa admirationis.

Agrotis admirationis, Guen. Ent. Mo. Mag. v. p. 38 (1868); Hudson, New Zealand Macr. Lep. p. 31, pl. v. f. 37.
Chersotis sericea, Butl. Cist. Ent. ii. p. 490 (1879).
Chersotis inconspicua, Butl. Cist. Ent. ii. p. 545 (1880).

Head and thorax grey-brown irrorated with fuscous; palpi with the 2nd joint blackish at sides; abdomen brownish grey, irrorated with black in female. Fore wing brownish grey, usually more or

less irrorated with black ; the subbasal line black, defined by whitish on outer side from costa to submedian fold ; the antemedial line defined by whitish on inner side, angled outwards below costa and in cell and very strongly above inner margin ; claviform more or less strongly defined by black ; orbicular and reniform rather small, defined by black and with slight fuscous centres, the former elliptical, some black suffusion between them and beyond the reniform ; the postmedial line dentate, slightly bent outwards below costa, excurved to vein 4, then oblique and incurved in submedian fold ; a subterminal series of pale spots with dentate black marks on their inner side, slightly angled outwards at vein 7 and excurved at middle ; a terminal series of black points ; cilia with a pale line at base. Hind wing grey suffused with fuscous, especially towards termen ; cilia pale with a brown line through them ; the underside grey irrorated with brown, a prominent black discoidal spot.

Hab. New Zealand (*Hutton, Skelton, Purdie, Mathew*), 5 ♂, 3 ♀, types *sericea* and *inconspicua*. *Exp.* 38 millim.

*301. Euxoa ceropachoides. (Plate LXI. fig. 7.)

Agrotis ceropachoides, Guen. Ent. Mo. Mag. v. p. 39 (1868); Hudson's New Zealand Moths, p. 32, pl. vi. f. 1.

♂. Head and thorax grey mixed with dark brown ; tarsi banded with black ; abdomen grey tinged with brown, the anal tuft pale rufous. Fore wing grey tinged with greenish and thickly irrorated with dark brown ; a semicircular whitish mark below base of cell ; the antemedial line ill-defined, whitish, angled outwards below costa, where there is a dark striga on its outer side ; orbicular and reniform grey, indistinctly defined by blackish, the former rather produced on outer side ; the postmedial line ill-defined, whitish, slightly bent outwards below costa, where there is a dark striga on its inner side, excurved to vein 4, then incurved ; a pale subterminal line, slightly defined on inner side at costa with blackish, angled outwards at vein 7 and dentate at veins 4, 3, 2 ; a terminal series of small black lunules ; cilia white at tips. Hind wing uniform grey-brown, the cilia white at tips ; the underside whitish irrorated with brown.

Hab. New Zealand, Rakaia (*Fereday*) in Coll. Meyrick. *Exp.* 36 millim.

302. Euxoa cinerea.

Noctua cinerea, Schiff. Wien. Verz. 80. 3 (1776); Hübn. Samml. Eur. Schmett., Noct. ff. 155, 156; Godt. Lép. Fr. v. p. 274, pl. 71. ff. 5, 6; Steph. Ill. Brit. Ent., Haust. iii. p. 127 ; Dup. Lép. Fr. Suppl. iii. p. 178, pl. 17 ; Staud. Cat. Lep. pal. p. 148.
Noctua obscura, Hübn. Eur. Schmett., Noct. ff. 157, 490 (1827).
Agrotis fusca, Boisd. Ic. Lep. Eur. pl. 78. f. 4 (1832).
Orthosia murina, Ev. Bull. Mosc. iii. p. 213 (1848).
Agrotis alpigena, Tur. Bull. Soc. Ent. Ital. xvi. p. 75 (1883); Calb. Iris, i. p. 226, pl. 12. ff. 7, 8.

Agrotis livonica, Teich. Stett. ent. Zeit. 1886, p. 169.
Agrotis turatii, Staud. Iris, i. p. 216, pl. 10. f. 5 (1888); id. Cat. Lep. pal. p. 145.
Agrotis tephrina, Staud. Cat. Lep. pal. p. 148 (1901).

Head and thorax grey, irrorated with dark brown and tinged with rufous; palpi mostly black; tegulæ black at base; pectus, legs, and abdomen dark brown. Fore wing grey irrorated with dark brown; a waved black subbasal line from costa to submedian fold; a waved antemedial line; a waved medial shade excurved at middle, the area beyond it suffused with rufous; reniform represented by a small lunule; postmedial line blackish defined by grey, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line slightly angled outwards at vein 7 and excurved at middle, the area beyond it rather greyer; a terminal series of blackish points. Hind wing whitish tinged with rufous, especially in female; the underside whiter, the costal area irrorated with brown, a blackish discoidal spot and sinuous postmedial line.

Ab. 1. *alpigena*. Paler; fore wing violaceous grey with the markings indistinct.

Ab. 2. *livonica*. Much darker fuscous brown.

Ab. 3. *fusca* ♀. Large, black-brown.

Ab. 4. *tephrina*. Small, the fore wing narrower, the markings usually very distinct; hind wing whiter; ♀ sometimes with the ground-colour black.—Britain.

Hab. Britain, Leech Coll.; France, Sand Coll.; Germany, Zeller Coll.; Hungary, D'Emmick Coll.; Switzerland, Frey Coll.; Spain; Italy; Norway, Zeller Coll.; Turkey; Russia, Urals; Armenia; Asia Minor, Pontus. *Exp.* 32–42 millim.

303. Euxoa crassilinea. (Plate LX. fig. 16.)

Agrotis crassilinea, Wllgrn. Wien. ent. Mon. iv. p. 168 (1860).

♀. Head and thorax grey irrorated with black; abdomen ochreous irrorated with fuscous. Fore wing grey irrorated with black; an indistinct waved black subbasal line from costa to submedian fold; antemedial line double, the outer strong, waved, and angled outwards above inner margin; claviform slightly defined by black above; orbicular and reniform very slightly defined by black and rufous, the former rounded; the postmedial line double, the inner rather strong, slightly sinuous, bent outwards below costa, slightly incurved at discal fold, incurved below vein 4; the subterminal line represented by a series of black spots conjoined in places, angled outwards at vein 7 and excurved at middle; a terminal series of black lunules. Hind wing with the basal half whitish bounded by a sinuous medial line, the terminal half fuscous; a fine black terminal line; cilia whitish, with fuscous line through them.

Hab. Basutoland, Maseru (*Crawshay*), 1 ♀; Cape Colony, type † ♀ in Mus. Stockholm. *Exp.* 38 millim.

Sect. III. (*Exarnis*). Antennæ of male bipectinate, with short fasciculate branches, the apical part serrate.

A. Hind wing white, the terminal area often tinged with brown.
  a. Fore wing with the veins of terminal area defined by pale dentate marks.
    a^1. Claviform large.
      a^2. Claviform elongate, pointed at extremity, filled in by dark colour ..... *spinifera.*
      b^2. Claviform rounded at extremity, defined by black. [*fictilis.*
        a^3. Orbicular rounded, reniform large ..... *obelisca* ab.
        b^3. Orbicular narrow, oblique, reniform small ..... *distinguenda.*
    b^1. Claviform small, short ..... *christophi.*
  b. Fore wing with the veins of terminal area not defined by pale dentate marks.
    a^1. Fore wing with the veins streaked with white ..... *edmondsi.*
    b^1. Fore wing with the veins not streaked with white.
      a^2. Fore wing with the costal area ochreous white to the postmedial line.
        a^3. Fore wing with the orbicular elongate and produced towards base ..... *proleuca.*
        b^3. Fore wing with the orbicular rounded..... *hastifera.*
      b^2. Fore wing without ochreous-white fascia on costal area.
        a^3. Fore wing with well-defined blackish fascia in cell between the stigmata.
          a^4. Fore wing with the antemedial line strongly angled outwards in cell ..... *lutescens.*
          b^4. Fore wing with the antemedial line not angled outwards in cell ..... *araucaria.*
        b^3. Fore wing without well-defined blackish fascia in cell.
          a^4. Fore wing with the transverse lines present.
            a^5. Fore wing with the stigmata well defined.
              a^6. Fore wing with the orbicular large, more or less rounded..... *obelisca.*
              b^6. Fore wing with the orbicular small.
                a^7. Fore wing with the orbicular elongate and produced to a point ..... *radius.*
                b^7. Fore wing with the orbicular rounded or elliptical.
                  a^8. Fore wing with the ground-colour grey.
                    a^9. Fore wing with the subterminal line formed by a series of small dentate marks ..... *poliotis.*
                    b^9. Fore wing with the subterminal line not dentate..... *armena.*
                  b^8. Fore wing with the ground-colour more or less tinged with rufous.
                    a^9. Fore wing with the postmedial line produced to points on the veins ..... *brachypecten.*
                    b^9. Fore wing with the postmedial line minutely dentate.
                      a^{10}. Fore wing with the postmedial line angled inwards in submedian fold ..... *coquimbensis.*
                      b^{10}. Fore wing with the postmedial line not angled inwards in submedian fold ..... *americana.*

b^5. Fore wing with the stigmata almost obsolete ..... *bogdanovi.*
b^4. Fore wing with the transverse lines obsolete . *mollis.*
B. Hind wing entirely suffused with brown.
a. Fore wing with the veins of terminal area defined by white streaks ..... *panoplias.*
b. Fore wing with the veins of terminal area not defined by white streaks.
a^1. Fore wing with the postmedial line present.
a^2. Fore wing with the antemedial line present.
a^3. Fore wing thickly irrorated with black.
a^4. Fore wing without white annuli to the stigmata.
a^5. Fore wing with the orbicular a small black spot ..... *epicremna.*
b^5. Fore wing with the orbicular a small annulus ..... *mesotoxa.*
b^4. Fore wing with white annuli to the stigmata.
a^5. Fore wing with the claviform defined by black at extremity..... *baliopa.*
b^5. Fore wing with the claviform obsolete ... *canariensis.*
b^3. Fore wing not thickly irrorated with black.
a^4. Fore wing with small dentate dark marks before the subterminal line.
a^5. Fore wing with the stigmata well defined.
a^6. Fore wing with the stigmata large ... .. *tibetana.*
b^6. Fore wing with the stigmata small.
a^7. Fore wing with pale streak on median nervure ..... *æquicuspis.*
b^7. Fore wing without pale streak on median nervure .... *humigena.*
b^5. Fore wing with the stigmata nearly obsolete.
a^6. Fore wing with small quadrate blackish spot between the stigmata ..... *pallidifrons.*
b^6. Fore wing without dark mark between the stigmata ..... *cremata.*
b^4. Fore wing without small dentate dark marks before the subterminal line.
a^5. Fore wing wholly suffused and irrorated with white ..... *spoderopa.*
b^5. Fore wing suffused and irrorated with white except discal area ..... *tephrias.*
c^5. Fore wing without white suffusion.
a^6. Fore wing with the lines distinct ..... *lucicolens.*
b^6. Fore wing with the lines indistinct ..... *cognita.*
b^2. Fore wing with the antemedial line obsolete ..... *photophila.*
b^1. Fore wing with the transverse lines obsolete ..... *perigramma.*

304. Euxoa spinifera.

Noctua spinifera, Hübn. Samml. Eur. Schmett., Noct. f. 389 (1827); Herr.-Schäff. Eur. Schmett., Noct. f. 24; Staud. Cat. Lep. pal. p. 147.
Telmia spinula, Hübn. Verz. p. 228 (1827).
Agrotis biconica, Koll. Hügel's Kashmir, iv. p. 480 (1848); Hmpsn. Moths Ind. ii. p. 182, & iv. p. 508.
Agrotis exigua, Koll. Hügel's Kashmir, iv. p. 481 (1848).
Agrotis spiculifera, Guen. Noct. i. p. 266 (1852).
Agrotis aristifera, Guen. Noct. i. p. 266 (1852).
Agrotis ferina, Feld. Reis. Nov. pl. 110. f. 12 (1874).
Agrotis hodnæ, Oberth. Ét. Ent. iii. p. 45, pl. 5. f. 8 (1878); Staud. Cat. Lep. pal. p. 147.

♂. Head and thorax grey-white mixed with pale brown and a few black scales; palpi blackish at sides except at extremity; tegulæ with dark medial line; tarsi black, ringed with white;

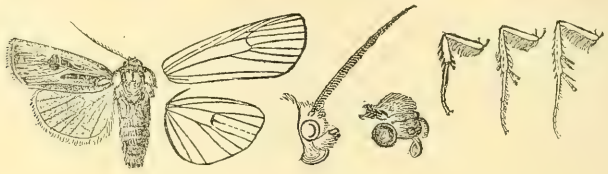


Fig. 60.—*Euxoa spinifera*, ♂. ½.

abdomen white, dorsally tinged with ochreous. Fore wing pale ochreous with a violaceous tinge and slight fuscous suffusion, especially on costal area; the veins slightly streaked with fuscous; an indistinct double subbasal line from costa to submedian fold; the antemedial line represented by oblique double striæ from costa and a slightly curved line from median nervure to vein 1; the claviform very elongate lanceolate, strongly defined by black and filled in by dark brown; the orbicular and reniform with fuscous centres and ochreous annuli defined by black, the former elliptical and with its outer edge produced to a point, often open above, the latter often angled inwards on median nervure, a black fascia between them in cell and slight streaks from outer edge of reniform; the postmedial line hardly traceable, dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale, dentate to termen on veins 7, 4, 3, with dentate black marks on its inner side at middle and the area beyond it blackish except towards apex and tornus; a terminal series of black points. Hind wing semihyaline white, the costal area suffused with ochreous, a fine terminal line on costal half.

♀. Usually darker; hind wing with the veins, costal and terminal areas tinged with fuscous.

Hab. S. France; Spain; Italy; Sicily; Canaries; Algiers, type † ♀ *hodnæ* in Coll. Oberthur; Egypt; Eritrea, Massowah (*Barker*), 1 ♀; British East Africa, Athi-ya-Mawe (*Betton*), 1 ♂, 1 ♀, Kikuyu (*Crawshay*), 1 ♂, 2 ♀, Eb Urru (*Betton*), 1 ♂, 1 ♀; Mashonaland, Salisbury (*Marshall*), 1 ♂, 2 ♀; Transvaal (*Ross*), 1 ♂; Natal, Estcourt (*Hutchinson*), 1 ♂, 1 ♀, Durban (*Gooch, Leigh*), 1 ♂, 1 ♀; Basutoland, Maseru (*Crawshay*), 2 ♂; Cape Colony, type † ♂ *ferina* in Coll. Rothschild, (*A. Smith, Drège*) 4 ♂; Syria; Persia, Fao (*Cumming*), 1 ♂; Kashmir, Narkundah (*McArthur*), 1 ♂; Kulu, Sultanpur (*G. Young*), 1 ♂, 1 ♀; Punjab, Simla (*Swinhoe*), 2 ♀, Kangra (*Hocking*), 1 ♂, 7 ♀, Cambellpur (*Yerbury*), 3 ♂, Jubbulpore (*Butler*), 2 ♀, Manpuri, 1 ♂, 1 ♀, Allahabad, 2 ♀; Bengal, Calcutta, 2 ♀; Bombay (*Swinhoe*), 1 ♀, Poona, 1 ♀; Nilgiris (*Hampson*), 2 ♀; Ceylon (*Templeton*), 1 ♀, Trincomali (*Yerbury*), 1 ♂, 1 ♀; Burma, Myngyan (*Watson*), 1 ♀. *Exp.* 26–40 millim.

Larva. Mill. Ann. Soc. Lyon, (2) xix. p. 41, pl. 112. ff. 1, 2 (1872).
Greenish-grey; the dorsum ochreous; dorsal line double, brown; subdorsal line dark; supra- and substigmal lines whitish with darker edges; head and thoracic shield ochreous. Food-plant, grasses.

305. Euxoa distinguenda.

Agrotis distinguenda, Led. Noct. Eur. p. 221 (1857); Herr.-Schäff. Neue Schmett. ff. 60–61; Staud. Cat. Lep. pal. p. 150.
Agrotis aquilina, Boisd. Icones, pl. 77. f. 6 (nec Hübn.).
Agrotis hastifera, Donz. Ann. Soc. Ent. Fr. 1847, pl. 8. f. 2 (nec f. 1).

Head and thorax brown mixed with black and grey; tarsi banded with black; abdomen ochreous brown, the ventral surface whitish irrorated with brown. Fore wing grey, suffused with fuscous brown; the subbasal line whitish, defined by black on inner side and angled outwards on median nervure; the antemedial line oblique, waved, defined by whitish on inner side, strongly angled outwards below costa and slightly above inner margin; claviform large, prominently defined by black; orbicular and reniform with brown centres and grey annuli defined by black, the former elliptical, oblique, the cell before and between them and the area between reniform and postmedial line suffused with black; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then incurved, the area beyond it pale; the subterminal line represented by a series of pale points with dentate black marks on their inner side, the area beyond it suffused by fuscous indented by grey dentate marks defining veins 3, 4, and a patch at apex; a terminal series of minute black lunules. Hind wing white, the veins and a fine terminal line brown; the underside with the costa tinged with ochreous and slightly irrorated with brown, a small discoidal spot.

Hab. S. France, Ardèche, 1 ♀ Zeller Coll.; Switzerland (*Anderegg*), 1 ♂ D'Emmick Coll., Valais; Hungary; W. Siberia, Altai. *Exp.* 34 millim.

306. Euxoa christophi. (Plate LX. fig. 17.)

Agrotis christophi, Staud. Berl. ent. Zeit. 1870, p. 110; id. Cat. Lep. pal. p. 150.
Agrotis lugens, Staud. Berl. ent. Zeit. 1870, p. 111.

♂. Head and thorax brown, mixed with grey and black; tegulæ with black medial line; tarsi banded with black; abdomen pale brown, the ventral surface whitish irrorated with brown. Fore wing pale ochreous or grey-brown, the costal area paler except the costa itself to the postmedial line; a black streak below base of cell crossed by an oblique pale striga representing the subbasal line; the antemedial line obsolete except between subcostal nervure and vein 1, angled inwards on median nervure, then excurved; claviform small, black, or filled in with black, and with a dark streak from it in submedian fold; orbicular and reniform with brown centres and pale annuli defined by black, the former oblique elliptical, the

cell before and between the stigmata black-brown; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; the veins with dark streaks to the subterminal line, which is greyish defined by small dentate black marks before its medial part, and the area beyond it fuscous except at apex, the line dentate at veins 7, 6, 4, 3; a fine waved terminal black line. Hind wing ochreous white, the veins and marginal areas tinged with brown; cilia white; the underside with the costal and terminal areas irrorated with brown, a dark discoidal point.

Ab. 1. *lugens*. Fore wing darker and more uniform in colour.

Hab. S. Russia, Sarepta, 7 ♂, Zeller and Leech Colls.; W. Turkestan, Fergana. *Exp.* 34–38 millim.

Larva ochreous mottled with brown; dorsal line double, subdorsal and lateral lines indistinct; warts brown; stigmata black; head rufous mottled with brown.

307. **Euxoa edmondsi.** (Plate LX. fig. 18.)

Agrotis edmondsi, Butl. Trans. Ent. Soc. 1882, p. 131.

♂. Head and thorax grey with a brownish tinge; edges of patagia with some black scales; abdomen white, tinged with brown towards extremity. Fore wing grey, with an ochreous tinge and slightly suffused with fuscous; the subbasal line represented by oblique black striæ from costa and below cell; the antemedial line almost obsolete except in submedian interspace where it is black, defined by whitish on inner side and angled in submedian fold, then very strongly angled outwards above inner margin; claviform well-developed, fuscous defined by black; orbicular and reniform fuscous with grey annuli and black outline, the former elliptical, produced on outer side, the latter large; the postmedial line black defined by whitish on outer side, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; a subterminal series of pale dentate marks with black streaks on their inner side, the one above vein 5 extending to the postmedial line, and spots on their outer side; a terminal series of small black lunules; cilia whitish, with fine black line near tips. Hind wing pure white, with terminal crenulate black line.

♀. Head, thorax, and fore wing more tinged with fuscous; hind wing suffused with fuscous brown except in, below, and just beyond cell.

Hab. Chili (*Edmonds*), 1 ♂, 1 ♀ type, Talcahuano, Coquimbo (*J. J. Walker*), 2 ♂, 1 ♀. *Exp.* 44 millim.

308. **Euxoa proleuca**, n. sp. (Plate LX. fig. 19.)

♂. Head and thorax fuscous brown, slightly mixed with grey; tegulæ with black medial line; abdomen fuscous brown. Fore wing greyish brown; the costal area ochreous to the postmedial line, with pale brown streaks in the interspaces; traces of a blackish streak below base of cell; the subbasal and antemedial lines

obsolete; claviform slightly outlined with black; orbicular and reniform grey, defined by black, the former wedge-shaped and produced towards base, open above, the cell between the stigmata black-brown; traces of a postmedial line bent outwards below costa, excurved to vein 4, then oblique; faint traces of a subterminal line with slight black streaks before its medial portion; a fine dark terminal line. Hind wing white, the veins and a terminal line brown; the underside with the costal area irrorated with brown.

Hab. S. Russia, 1 ♂ type, Leech Coll.; *Exp.* 30 millim.

309. Euxoa hastifera.

Agrotis hastifera, Donz. Ann. Soc. Ent. Fr. 1847, p. 525, pl. 8. f. 1 (nec f. 2); Staud. Cat. Lep. pal. p. 151.

♂. Head and thorax reddish or blackish brown, mixed with purple-grey; tegulæ with black medial line; tarsi banded with black; abdomen brownish ochreous or greyish. Fore wing purplish fuscous brown, with broad ochreous-white costal fascia extending to postmedial line; a black patch below base of cell; an indistinct obliquely curved antemedial line from cell to inner margin; claviform moderate, defined by black; orbicular and reniform with brownish centres and ochreous annuli defined by black, the former round, the cell before and between them black; the postmedial line indistinct, excurved from costa to vein 4, then oblique; the subterminal line indistinct, pale, angled outwards at vein 7, and excurved at middle with some small dentate black marks before it at middle; some pale points on costa towards apex; a terminal series of black points and a fine pale line at base of cilia. Hind wing white, the termen tinged with brown; the underside with very slight brown irroration on costal and terminal areas, and a slight discoidal point.

Hab. S. France, Digne; Austria; Transylvania; S. Russia, Sarepta (*Christoph*), 2 ♂; Armenia; Asia Minor, Pontus; Persia; W. Siberia, Altai, 1 ♂. *Exp.* 38 millim.

310. Euxoa lutescens. (Plate LX. fig. 20.)

Noctua lutescens, Blanch. Gay's Faun. Chil., Ins. vii. p. 76 (1852).
Agrotis blanchardii, Berg, An. Soc. Arg. xiv. p. 281 (1882).

♂. Head and thorax reddish brown mixed with ochreous, some black at base of palpi, on frons and vertex of head; tegulæ with black medial line; patagia ochreous, edged with black and rufous; tarsi banded with black; abdomen ochreous white. Fore wing ochreous, some brown suffusion below base of cell; a blackish subbasal line defined by ochreous on outer side from costa to vein 1; the antemedial line dentate below costa and more strongly to the orbicular in cell, then retracted, more prominent from cell to vein 1 and slightly angled in submedian fold, obsolete towards inner margin; claviform elongate, defined by black; orbicular and reniform small, ochreous defined by black, the former oblique, open

above, the lower part of cell between them black; postmedial line double, minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line represented by an indistinct series of small dentate dark marks and a dark patch before it on costa; a terminal series of black points. Hind wing semi-hyaline white.

♀. Fore wing suffused with fuscous brown, leaving a diffused ochreous streak below basal two-thirds of costa and patch at apex.

Hab. Chili, Valparaiso (*J. J. Walker*), 1 ♂, 1 ♀. *Exp.* 42 millim. Type † ♀ in Mus. Paris.

311. Euxoa araucaria, n. sp. (Plate LX. fig. 21.)

♂. Head and thorax clothed with pale red-brown, fuscous, and grey scales; tegulæ with black medial line; patagia grey, edged with black and pale brown above; tarsi fuscous, ringed with white; abdomen pale grey-brown. Fore wing whitish, irrorated and suffused with pale brown; the basal and costal areas suffused with black; a double waved subbasal line from costa to submedian fold: a double waved antemedial line, angled outwards below costa and very strongly above inner margin; claviform moderate, blackish, defined by deep black; orbicular and reniform with fuscous centres and whitish annuli defined by black, the former small and produced to a point on outer side, a brown fascia in cell between the stigmata; an indistinct oblique waved line from cell to inner margin; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the terminal area suffused with brown, with traces of a pale dentate subterminal line. Hind wing white, the veins and termen tinged with brown; the underside with discoidal point and postmedial series of dark streaks on the veins.

Ab. 1. Fore wing pale brownish irrorated with black, but without black suffusion.—Argentina.

Hab. Chili, Valparaiso (*J. J. Walker*), 1 ♂ type; Argentina, Andes (*Fitzgerald*), 1 ♂. *Exp.* 40 millim.

312. Euxoa obelisca.

Noctua obelisca, Schiff. Wien. Verz. p. 223 (1776); Hübn. Samml. Eur. Schmett., Noct. f. 123; Godt. Lép. Fr. v. p. 214, pl. 64. f. 3; Steph. Ill. Brit. Ent., Haust. ii. p. 124; Staud. Cat. Lep. pal. p. 151.
Noctua ruris, Hübn. Eur. Schmett., Noct. f. 416 (1827).
Noctua praticola, Hübn. Eur. Schmett., Noct. f. 567 (1827).
Noctua fictilis, Hübn. Eur. Schmett., Noct. f. 710 (1827).
Agrotis villiersii, Guen. Ann. Soc. Ent. Fr. 1837, p. 173, pl. 8. ff. 1, 2; Herr.-Schäff. Eur. Schmett., Noct. f. 532.
Agrotis declarans, Wlk. x. 347 (1856).

♂. Head and thorax fuscous mixed with grey; tegulæ with blackish medial line; tarsi banded with black; abdomen grey-brown. Fore wing purplish brown, the inner and terminal areas paler; the costal area suffused with white to the postmedial line; a black streak below base of cell; an indistinct subbasal line curved from

costa to submedian fold; a double waved antemedial line from subcostal nervure to vein 1; claviform defined by black; orbicular and reniform large, grey-white defined by black, their centres slightly defined by brown, the cell before and between them suffused by blackish, the orbicular oblique, elliptical; the postmedial line minutely dentate, indistinct, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale, defined by slight dentate dark marks on its inner side, and the area beyond it darker except at apex, angled outwards at vein 7 and dentate at veins 3 and 4; a terminal series of black points. Hind wing white, the veins and termen tinged with brown; the underside with the costal and terminal areas irrorated with brown, a slight dark discoidal spot.

♀. Hind wing with the inner and terminal areas more strongly tinged with brown.

Ab. 1. *fictilis*. Fore wing with the veins of terminal area defined by pale dentate marks. Head, thorax, and fore wing usually much more ochreous.

Ab. 2. *ruris*. Head and thorax much greyer brown; fore wing grey-brown irrorated with dark brown and black; no black below base of cell or in cell; the antemedial line complete and more strongly angled outwards above inner margin; hind wing more tinged and irrorated with brown.

Hab. France, Sand Coll.; Germany, Mutzell and Zeller Colls.; Austria, Leech Coll.; Spain; Italy; Algeria; S. Russia, 1 ♂, 1 ♀, Leech Coll.; Armenia; Asia Minor, Pontus; W. Siberia, Altai; W. Turkestan, Ala Tau; ? Amurland; Kashmir, Kuijar (*McArthur*), 1 ♂, hab. ign., 1 ♂ type *declarans*. *Exp.* 38–40 millim.

313. Euxoa radius.

Bombyx radius, Haw. Lep. Brit. p. 119 (1803).
Noctua lignosa, Godt. Lép. Fr. v. p. 241, pl. 67. ff. 5, 6 (1821).
Noctua erythroxylea, Tr. Schmett. Eur. v. 3, p. 31 (1825).
Agrotis radiola, Steph. Ill. Brit. Ent., Haust. ii. p. 119, pl. 20. f. 3 (1827).
Noctua puta, Hübn. Samml. Eur. Schmett., Noct. f. 255 (1827); Godt. Lép. Fr. v. p. 243, pl. 67. f. 7; Staud. Cat. Lep. pal. p. 147.
Noctua renitens, Hübn. Eur. Schmett., Noct. ff. 715–717 (1827).
Aporophyla catalaunensis, Mill. Rev. Mag. Zool. 1873, p 4; id. Icones, pl. 146. ff. 4, 5.

♂. Head and thorax grey mixed with pale brown; palpi blackish at sides; tegulæ with black medial line; tarsi banded with black; abdomen brownish ochreous. Fore wing ochreous suffused with pale brown or rufous; the veins with dark streaks; a more or less developed black streak in basal part of submedian fold; an indistinct double waved subbasal line from costa to submedian fold, with some black suffusion between it and the double dentate antemedial line which is strongly angled inwards on vein 1; claviform small, defined by black; orbicular and reniform with fuscous centres and whitish annuli defined by black, the former elongate, usually connected with the reniform, sometimes represented by parallel dark lines; postmedial line dentate and produced

to black and white points on the veins, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line represented by a series of blackish and ochreous dentate marks in the interspaces; the terminal area darker below apex, a terminal series of black points; cilia ochreous intersected with brown. Hind wing hyaline white or the veins and costal area tinged with brown; a terminal series of points sometimes present.

♀. Fore wing suffused with fuscous; hind wing usually pale fuscous brown.

Hab. Britain, Leech Coll.; France; Germany, Zeller Coll.; Spain, Leech Coll., Gibraltar, 1 ♂; Algeria (*Mrs. Nicholl*), 1 ♀; Syria; Persia; W. Turkestan, Turkomania; Mongolia. *Exp.* 32 millim.

Larva. Meyr. Brit. Lep. p. 95; Barrett, Lep. Brit. iii. p. 304, pl. 125. f. 2.

Light fuscous, brownish ochreous above; dorsal line darker, double, traversing a series of freckled spots; subdorsal line brown, finely pale-edged below; head and thoracic shield brown. Food-plants: *Polygonum*, *Taraxicum*, *Lactuca*. 9–4.

314. **Euxoa poliotis**, n. sp. (Plate LX. fig. 22.)

♂. Head and thorax pale rufous mixed with white; palpi blackish at sides except towards extremity; tegulæ with blackish medial line; tarsi with blackish bands; abdomen white, dorsally tinged with pale brown. Fore wing grey, suffused with pale reddish brown; a waved whitish subbasal line from costa to submedian fold defined by black; a similar antemedial line strongly angled outwards above inner margin; claviform small, defined by black; orbicular and reniform with fuscous centres and pale annuli defined by black, the former rather small, round, sometimes connected with the latter by a blackish streak; an indistinct diffused medial shade; the post-medial line double, the outer dentate and produced to points on the veins, sinuous, incurved in discal and submedian folds; the subterminal line pale, minutely dentate, defined by brown suffusion or dentate blackish marks on inner side, angled outwards at vein 7, excurved and dentate below middle; a terminal series of black points. Hind wing white, the veins tinged with brown; the underside with the costal area irrorated with brown.

♀. Head, thorax, and usually the fore wing to the postmedial line darker; hind wing with the terminal area tinged with fuscous.

Hab. Queensland, Townsville, Ravenswood (*Turner*), 3 ♂, 3 ♀ type. *Exp.*, ♂ 36, ♀ 42 millim.

315. **Euxoa armena.** (Plate LX. fig. 23.)

Agrotis armena, Ev. Bull. Mosc. ii. p. 222 (1856); Staud. Cat. Lep. pal. p. 147.

Agrotis deserta, Staud. Berl. ent. Zeit. 1870, p. 112; id. Cat. Lep. pal. p. 149.

Agrotis obscura, Staud. Berl. ent. Zeit. 1870, p. 113.

♂. Head and thorax fuscous mixed with grey; tarsi banded

with black; abdomen ochreous white. Fore wing grey, irrorated with fuscous; traces of a dark subbasal line from costa to submedian fold; an indistinct waved antemedial line; orbicular and reniform whitish defined by fuscous, the former somewhat quadrate; an indistinct oblique medial line from lower angle of cell to inner margin; the postmedial line indistinct, excurved from below costa to vein 4, then oblique; a diffused dark subterminal line slightly angled outwards at vein 6 and excurved at middle; a terminal series of black points. Hind wing yellowish white slightly tinged with fuscous, especially towards termen.

Ab. 1. *obscura*. Fore wing almost uniform in colour.

Hab. S. Russia, Sarepta, 1 ♂, 1 ♀, (*Christoph*) 1 ♂, Zeller Coll. *Exp.* 40 millim.

316. **Euxoa brachypecten.** (Plate LX. fig. 24.)

Agrotis brachypecten, Hmpsn. Bull. Liverp. Mus. ii. p. 35 (1899).

Head and thorax red-brown mixed with a few grey and black scales; palpi blackish at sides except at extremity; tegulæ with the basal half darker; tarsi banded with black; abdomen whitish, dorsally tinged with ochreous and fuscous. Fore wing reddish brown, suffused in parts with fuscous or grey; a double waved subbasal line from costa to submedian fold; a double waved antemedial line, strongly angled outwards above inner margin; claviform small, fuscous, defined by black; orbicular and reniform greyish with fuscous centres and black outline, the former small, round or elliptical, the latter obscured by the diffused blackish medial shade; the postmedial line dentate and produced to points on the veins, slightly bent outwards below costa, then curved; subterminal line grey, irregularly dentate, with some dentate black marks on its inner side and patch at costa, the area beyond it blackish except at apex and tornus; a terminal series of black points. Hind wing semihyaline white; the veins brownish, the termen suffused with fuscous; the inner area clothed with ochreous hair; the underside with the costal area ochreous, with dark postmedial mark.

Hab. Socotra, Adho Dimellus (*Grant*), 1 ♂, 4 ♀, Hadibu Plain, 4 ♂ type, Jena Agahan, 1 ♀. *Exp.* 34 millim.

317. **Euxoa coquimbensis**, n. sp. (Plate LX. fig. 25.)

♂. Head and thorax reddish brown, mixed with whitish and black; tegulæ with slight black medial line; abdomen pale at base, ochreous brown towards extremity. Fore wing red-brown tinged with fuscous; the subbasal line double, black with pale centre, from costa to submedian fold; the antemedial line similar, angled outwards in cell and very strongly above inner margin; the orbicular and reniform small, pale with slight fuscous centres and pale outline; the postmedial line double, minutely dentate, bent outwards below costa, excurved to vein 4, then oblique and acutely angled inwards below submedian fold; the subterminal line indistinct, pale, angled

outwards at vein 7 and excurved at middle; the termen and cilia with fine pale lines. Hind wing semihyaline white.

Hab. Chili, Coquimbo (*J. J. Walker*), 1 ♂ type. *Exp.* 34 millim.

318. Euxoa americana. (Plate LX. fig. 26.)

Luperina americana, Blanch. Gay's Chile, Ins. vii. p. 77, pl. 4. f. 8 (1852).

Head and thorax red-brown, the scales with greyish tips; abdomen ochreous irrorated with brown, the anal tuft rufous. Fore wing red-brown irrorated with dark brown; a double, black, pale-centred, subbasal line from costa to submedian fold interrupted in cell; a similar antemedial line angled outwards below costa, in cell and strongly above inner margin, excurved below submedian fold; orbicular and reniform moderate, with fuscous centres, rufous annuli, and black outline, the former round; postmedial line double, minutely dentate, bent outwards below costa, slightly incurved in discal fold and oblique below vein 4; the subterminal line indistinct, pale, minutely dentate, excurved below costa and at middle, with fuscous patch before it at costa and the area beyond it darker; a terminal series of black points. Hind wing semihyaline white, the veins and terminal area tinged with brown; the underside with the costal area irrorated with brown; a terminal series of black points.

Hab. Chili, Valparaiso (*J. J. Walker*, *Edmonds*), 4 ♂, 2 ♀. *Exp.* 36 millim.

319. Euxoa bogdanovi.

Leucania bogdanovi, Ersch. Fedtsch. Reis. p. 45, pl. 4. f. 54 (1874); Staud. Cat. Lep. pal. p. 202.

Hiptelia grumi, Alph. Stett. ent. Zeit. 1887, p. 170; id. Rom. Mém. v. p. 170, pl. 7. f. 7.

♂. Head and thorax ochreous, slightly mixed with rufous; abdomen ochreous. Fore wing ochreous tinged with rufous; an oblique waved antemedial line; orbicular and reniform indistinctly outlined with rufous, the latter placed on a waved diffused rufous medial line angled at lower angle of cell; postmedial line minutely dentate, strongly bent outwards below costa, excurved to vein 4, then oblique; the terminal area somewhat more suffused with rufous. Hind wing ochreous. Underside of both wings with indistinct curved postmedial line.

Hab. W. Turkestan, Ferghana, Issyk-Kul, 1 ♂. *Exp.* 40 millim.

320. Euxoa mollis. (Plate LX. fig. 27.)

Agrotis mollis, Staud. Iris, iv. p. 271 (1891); id. Cat. Lep. pal. p. 150.

♂. Head and thorax dark brown mixed with grey; tarsi banded with black; abdomen ochreous white. Fore wing ochreous, thickly suffused with pale grey-brown; orbicular and reniform obscurely

defined with ochreous, the former oblique, open above; a fine ochreous line at base of cilia. Hind wing pure white, the margins slightly tinged with ochreous.

Hab. W. Turkestan, Turkomania, 1 ♂, Ferghana. *Exp.* 40 millim.

321. Euxoa panoplias. (Plate LX. fig. 28.)

Agrotis panoplias, Meyr. Faun. Hawai. i. p. 144 (1899).

♂. Head and thorax dark brown, the scales tipped with white; antennæ with the shaft white at base; tegulæ darker brown at base; pectus, legs, and abdomen grey and dark brown. Fore wing dark brown suffused with white, leaving dark streaks on the veins and in interspaces towards termen; claviform blackish, defined by deep black extending from base to middle, towards which it expands; a blackish spot on base of costa; the antemedial line blackish, acutely angled outwards below costa and slightly inwards on median nervure and outwards in submedian fold; orbicular and reniform dark brown defined by black, the former elliptical; short black streaks above bases of veins 3 and 2, with a diffused line from them to inner margin; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; dentate brown patches on terminal area on each side of vein 5 and in submedian interspace; a terminal series of black points. Hind wing dark brown; cilia mixed with white and with pale line at base; the underside suffused with grey and with dark discoidal point.

Hab. Hawaii, Kona (*Perkins*), 1 ♂ type. *Exp.* 40 millim.

322. Euxoa epicremna. (Plate LX. fig. 29.)

Agrotis epicremna, Meyr. Faun. Hawai. i. p. 149 (1899).

Head and thorax black-brown, the hairs slightly tipped with grey; pectus with the hair greyer; abdomen black-brown. Fore wing dark brown, thickly irrorated with black; a slightly waved black subbasal line from costa to submedian fold; a waved antemedial line angled outwards below costa and more strongly above inner margin and inwards on median nervure and vein 1; orbicular represented by a small black spot, the reniform by a larger spot with slight pale centre; an indistinct medial shade from cell to inner margin; postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale with dentate dark marks on its inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing dark brown, darker towards termen; the cilia grey at tips; the underside white, the costal area irrorated with brown, a dark discoidal point, curved postmedial line, and terminal dark band.

Hab. Hawaii, Haleakala (*Perkins*), 1 ♂, 1 ♀, type. *Exp.* 46–50 millim.

323. Euxoa mesotoxa. (Plate LX. fig. 30.)

Agrotis mesotoxa, Meyr. Faun. Hawai. i. p. 148 (1899).

♀. Head and thorax dark brown, the scales slightly tipped with grey; pectus paler; abdomen pale brown. Fore wing dark brown irrorated with black; an indistinct waved subbasal line from costa to submedian fold; a waved antemedial line defined by grey on inner side, angled outwards below costa and more strongly above inner margin and inwards on vein 1; claviform small, defined by black; orbicular and reniform defined by black, the former small, elliptical, with greyish annulus, the latter wholly dark; a slightly curved and waved medial shade; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line greyish, with small dentate black marks on its inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing cupreous brown; cilia grey, with a brown line through them; the underside whitish, the costal area irrorated with brown, a dark discoidal point and indistinct curved postmedial line.

Hab. Hawaii, Kona (*Perkins*), 1 ♀ type. *Exp.* 44 millim.

324. Euxoa baliopa. (Plate LX. fig. 31.)

Agrotis baliopa, Meyr. Faun. Hawai. i. p. 149 (1899).

Head and thorax fuscous brown mixed with grey; palpi and frons darker, with some ochreous hair; tarsi with pale rings; abdomen fuscous brown mixed with grey. Fore wing purplish grey, irrorated and in places suffused with black; an indistinct, waved, black subbasal line from costa to submedian fold; a waved black antemedial line strongly angled outwards above inner margin; claviform with its extremity defined by black; orbicular and reniform with fuscous centres and whitish annuli defined by black, the former round, the latter with its lower extremity produced between veins 3, 4, and connected with a white-and-black **U**-shaped mark below vein 3, the cell between the stigmata blackish; an indistinct, oblique, waved, medial line from cell to inner margin; postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line whitish, with dark patch on its inner side at costa, angled outwards at vein 7, then represented by white points on dentate black marks; a terminal series of black points. Hind wing fuscous brown; the cilia pale, with brown line near base; the underside grey irrorated with fuscous, a black discoidal spot, sinuous postmedial line, and terminal series of points.

Hab. Hawaii, Haleakala (*Perkins*), 2 ♂, 1 ♀, type. *Exp.* 46 millim.

*325. Euxoa canariensis. (Plate LXI. fig. 6.)

Agrotis canariensis, Rebel, Ann. Naturhist. Hofmus. Wien, 1902, p. 59.

♂. Head and thorax brown irrorated with bluish grey; tarsi

banded black and white; abdomen whitish mixed with brown. Fore wing bluish grey, irrorated and suffused with dull brown; a slight blackish streak below basal part of cell; the subbasal line double, waved, from costa to vein 1; the antemedial line double, waved, angled outwards in cell and inwards on median nervure and vein 1; orbicular and reniform brown with grey annuli incompletely defined by brown, the former small, somewhat V-shaped, the latter constricted at middle; traces of a curved medial shade; postmedial line defined by greyish on outer side, dentate, bent outwards below costa, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line indistinct, greyish, dentate and angled outwards at vein 7, defined by a dark patch before it on costa, the area beyond it darker at middle; a fine pale line at base of cilia. Hind wing whitish, entirely suffused with brown except parts of interspaces of basal two-thirds; cilia with brown line near base, the tips white; the underside white, the costal and terminal areas irrorated with fuscous brown, a small prominent discoidal spot and a curved postmedial series of short dark striæ on the veins.

Hab. Canaries, Teneriffe, Santa Cruz, type † ♂, Grand Canary, 1 ♀, in Mus. Vienna. *Exp.* 38 millim.

326. **Euxoa tibetana.** (Plate LX. fig. 32.)

Agrotis tibetana, Moore, A. M. N. H. (5) i. p. 233 (1878); id. 2nd Yarkand Mission, p. 10, pl. 1. f. 16.
Agrotis modesta, Moore, P. Z. S. 1881, p. 351; Hmpsn. Moths Ind. ii. p. 188.
Agrotis monticola, Hmpsn. Moths Ind. ii. p. 183 (1894).

Head and thorax grey-white pencilled with brown; palpi blackish at sides; tegulæ with brown medial line; tarsi banded with black; abdomen grey, dorsally tinged with fuscous. Fore wing pale grey-brown; a double, waved, subbasal line from costa to submedian fold; a double waved antemedial line; claviform slightly outlined with black; orbicular and reniform large, defined by black, the former rounded, open above, some blackish suffusion in cell between them; traces of a waved medial line; the postmedial line indistinct, double, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line greyish, indistinct, slightly angled outwards at vein 7 and excurved at middle, the area beyond it often rather darker; a terminal series of black points; cilia whitish, with a fuscous line through them. Hind wing fuscous brown; the cilia whitish, with fuscous line at base; the underside ochreous white, the costal area irrorated with brown; a blackish discoidal spot and curved postmedial line.

Ab. 1. Fore wing with the markings much more distinct.

Hab. Lahoul, 12,000 feet, type † ♂ *monticola* in Coll. Elwes; Leh; Kashmir, 1 ♀ type *modesta*, Rajaori (*Leech*), 2 ♂, Goorais Valley, 1 ♂, 3 ♀, Barra Larcha (*McArthur*), 1 ♂, 2 ♀. *Exp.* 38 millim.

327. Euxoa æquicuspis. (Plate LXI. fig. 8.)

Agrotis æquicuspis, Staud. Iris. xii. p. 365, pl. 6. f. 18 (1899); id. Cat. Lep. pal. p. 147.

♂. Head and thorax grey mixed with brown and black; tarsi with white rings; abdomen grey and dark brown, the anal tuft ochreous. Fore wing grey tinged with reddish brown; a double subbasal line waved from costa to submedian fold; a double, waved, antemedial line more strongly excurved above inner margin; claviform moderate, defined by black; orbicular and reniform rather small, grey, defined by black and with slight fuscous centres, the former round; an indistinct waved medial line; the postmedial line minutely dentate, slightly bent outwards below costa and incurved in discal fold, incurved below vein 4; the median nervure and bases of veins 2, 3, 4 streaked with grey between the ante- and postmedial lines; the subterminal line pale, slightly angled outwards at vein 7 and dentate at veins 4 and 3, defined on inner side by a fuscous patch at costa and small dentate black marks at middle; the area beyond it dark; a fine terminal crenulate black line; cilia pale brown, with a darker line through them. Hind wing pale suffused with fuscous brown, especially on terminal area; cilia pale; the underside grey irrorated with fuscous, a blackish discoidal lunule and sinuous postmedial line.

Hab. E. Turkestan, Thian-Shan Mts.; Mongolia, Urga, 1 ♂. *Exp.* 30 millim.

*328. Euxoa humigena. (Plate LXIX. fig. 19.)

Agrotis humigena, Püngl. Iris, xii. p. 291, pl. 9. f. 1 (1899); Staud. Cat. Lep. pal. p. 149.

♂. Head and thorax pale reddish brown thickly irrorated with fuscous; tarsi black with pale rings; abdomen grey-brown. Fore wing grey-brown with a slight reddish tinge, thickly irrorated with fuscous; the lines distinct; the subbasal line double, waved, from costa to submedian fold; the antemedial line double, waved, strongly angled outwards above inner margin, the claviform a minute spot on its outer edge; orbicular and reniform defined by black, the former a small annulus touching or almost touching the antemedial line, the latter large, extending to below cell, its centre defined by fuscous, its outer line rather diffuse and connected with postmedial line by a streak in discal fold; the postmedial line double, dentate, the outer line indistinct, bent outwards below costa, slightly incurved at discal fold, incurved below vein 4; subterminal line represented by a series of pale lunules with small dentate dark marks on their inner side and dark patch at costa, the area beyond it tinged with fuscous at middle; a terminal series of black points. Hind wing pale fuscous brown, the cilia paler; the underside greyish irrorated with brown, a dark discoidal spot and curved postmedial line.

Hab. Tibet, Kuku Nor, type † ♂ in Coll. Püngeler. *Exp.* 38 millim.

329. Euxoa pallidifrons, n. sp. (Plate LXI. fig. 9.)

♂. Head and thorax brown mixed with grey; frons whitish; palpi blackish; tarsi banded with blackish; abdomen grey-brown, the anal tuft tinged with fulvous. Fore wing pale grey-brown irrorated with black; a waved blackish subbasal line from costa to submedian fold; a waved antemedial line; orbicular and reniform very indistinctly defined by black and with a black spot between them; the postmedial line strongly dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line angled outwards at vein 7 and excurved at middle. Hind wing pale fuscous, the cilia ochreous white; the underside ochreous white, with slight discoidal point and curved postmedial line.

♀. Head and thorax pale ochreous brown; fore wing with the orbicular and reniform rather more distinct.

Hab. C. Asia, 1 ♂, 1 ♀, type Leech Coll. *Exp.* 38 millim.

330. Euxoa cremata. (Plate LXI. fig. 10.)

Spælotis cremata, Butl. Ent. Mo. Mag. xvii. p. 8 (1880).

Head and thorax grey mixed with black; palpi blackish at sides except at extremity; tegulæ with black medial line with rufous before it; abdomen fuscous mixed with grey, the anal tuft rufous. Fore wing grey irrorated and suffused with fuscous and slightly tinged with rufous; a double dentate subbasal black line filled in with whitish, from costa to submedian fold; a similar antemedial line angled outwards below costa and above inner margin, inwards on median nervure and excurved below cell; claviform and orbicular almost obsolete; reniform represented by a minute black annulus with streak above it in male; an indistinct medial line from lower angle of cell to inner margin; postmedial line dentate and produced to points on the veins, strongly bent outwards below costa, excurved to vein 4, then incurved; a whitish subterminal line, angled outwards at vein 7 and defined by small dentate black marks on its inner side; a terminal series of black points. Hind wing fuscous brown; the cilia white at tips; the underside white, the costal area irrorated with brown, a small discoidal spot and curved postmedial series of short striæ.

Hab. Hawaii, Maui (*Blackburn*), 1 ♂ type, Oahu, 1 ♀. *Exp.* 48 millim.

Larva. Blackburn, Ent. Mo. Mag. xix. p. 56.

Rather broad and depressed, especially near the head where it is rather swollen; pale drab, the dorsal area, except on first and last somites, with blackish patches decreasing in size towards extremity; thoracic shield testaceous edged with black; head testaceous; spiracles black; legs and prolegs tipped with blackish. Food-plant, a marine plant on sand-hills; hiding in the sand by day.

331. Euxoa spoderopa. (Plate LXI. fig. 11.)

Agrotis spoderopa, Meyr. Faun. Hawai. i. p. 148 (1899).

♂. Head and thorax red-brown mixed with grey; a white line behind tegulæ; abdomen ochreous tinged with rufous. Fore wing rufous, suffused almost wholly with grey-white, sometimes slightly on costal half to postmedial line; a slight dark streak in basal half of submedian fold; a waved subbasal line from costa to submedian fold, defined by white on inner side; a waved dark antemedial line defined by white on inner side, angled outwards below costa and inwards on vein 1; orbicular small, white, defined by brown and produced to a point on outer side, sometimes with brownish centre; reniform with brownish centre and grey annulus defined by brown; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; subterminal line defined by brownish suffusion on its inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing ochreous white suffused with brown; the underside whiter, with indistinct sinuous postmedial line.

Hab. Hawaii, Maui, Haleakala (*Perkins*), 2 ♂ type. *Exp.* 44 millim.

332. Euxoa tephrias. (Plate LXI. fig. 12.)

Agrotis tephrias, Meyr. Faun. Hawai. i. p. 147 (1899).

♂. Head and thorax reddish and dark brown mixed with grey; tegulæ with dark medial line with some rufous before it and sometimes a white line behind them; abdomen fulvous brown. Fore wing blackish brown, suffused and irrorated with white except on medial area between subcostal nervure and vein 1; a waved white subbasal line from costa to submedian fold; a sinuous dark antemedial line defined by white on inner side, acutely angled inwards on median nervure and strongly outwards above inner margin; orbicular small, elliptical, white defined by brown; reniform small, with brownish centre and grey annulus defined by brown; the postmedial line dentate, excurved from costa to vein 4, then incurved; the subterminal line defined by brownish, suffused on its inner side, angled outwards at vein 7 and dentate at veins 4 and 3; a fine terminal line. Hind wing ochreous white suffused with brown; the underside whiter, with sinuous postmedial punctiform line.

Hab. Hawaii, Kauai, Mt. Waimea, 2 ♂, Koholuamauo (*Perkins*), 1 ♂ type. *Exp.* 40 millim.

333. Euxoa lucicolens. (Plate LXI. fig. 13.)

Spælotis lucicolens, Butl. E. M. M. xvii. p. 7 (1880).

♂. Head fuscous brown; thorax ochreous brown, the hairs tipped with grey; tarsi blackish above; abdomen ochreous. Fore wing

pale grey-brown slightly irrorated with black; the subbasal line represented by black points on costa and median nervure; an indistinct waved antemedial line with black points on the veins; hardly a trace of orbicular or reniform stigmata; postmedial line dentate and produced to black points on the veins; faint traces of a subterminal line; a terminal series of black points. Hind wing pale fuscous brown, more ochreous towards inner margin; the underside ochreous white, with traces of a postmedial line on costal area.

Hab. Hawaii, Honolulu (*Blackburn*), 1 ♂ type. *Exp.* 44 millim.

*334. Euxoa cognita. (Plate LXIX. fig. 17.)

Agnotis cognita, Staud. Stett. ent. Zeit. 1881, p. 417; id. Cat. Lep. pal. p. 146.

♂. Head and thorax grey mixed with dark brown; tegulæ with black medial line; prothoracic crest black towards tip; abdomen grey-brown. Fore wing grey thickly irrorated with dark brown; traces of a subbasal line from costa to submedian fold; antemedial line very indistinct, double, waved; claviform indicated by a few black scales; orbicular and reniform very indistinctly defined by black scales; a medial shade angled at median nervure; an indistinct pale dentate subterminal line, slightly defined by brown on inner side, more distinctly towards costa; a fine slightly waved black terminal line; cilia fuscous with a pale line at base. Hind wing pale fuscous brown, the cilia pale with a brown line through them; the underside greyish, the costal area irrorated with brown, traces of postmedial and subterminal lines.

Hab. W. Turkestan, Samarkand, in Coll. Oberthur, Ala Tau. *Exp.* 36 millim.

335. Euxoa photophila. (Plate LXI. fig. 14.)

Leucania photophila, Butl. Ent. Mo. Mag. xv. p. 269 (1879).

♂. Ochreous. Fore wing slightly irrorated with fuscous; an indistinct dentate postmedial line excurved from costa to vein 4, then oblique; a terminal series of black points. Hind wing suffused and irrorated with fuscous; the cilia pale ochreous; the underside ochreous white.

Hab. Hawaii, Honolulu (*Blackburn*), 1 ♂ type. *Exp.* 40 millim.

336. Euxoa perigramma. (Plate LXI. fig. 15.)

Agrotis perigramma, Meyr. Faun. Hawai. i. p. 145 (1899).

♂. Head and thorax dark brown, the scales tipped with white; pectus and legs grey and brown; abdomen brownish grey, the anal tuft with an ochreous tinge. Fore wing fuscous brown suffused with grey; claviform defined by black extending from base to middle; orbicular and reniform defined by blackish, the former elliptical, the latter indistinct; the interspaces towards termen with

slight dark streaks. Hind wing fuscous brown; the cilia with ochreous line at base; the underside paler, with slight discoidal point.

Hab. Hawaii, Kilauea (*Perkins*), 1 ♂ type. *Exp.* 42 millim.

Sect. IV. (*Euxoa*). Antennæ of male strongly serrate and fasciculate.

A. Fore wing narrow, the costa somewhat concave.
  a. Fore wing without dentate black marks before the subterminal line ..... *vilsoni.*
  b. Fore wing with dentate black marks before the subterminal line ..... *lacunosa.*

B. Fore wing broader, the costa more arched.
  a. Fore wing with veins 3, 4, 6, 7 defined by pale streaks strongly indenting the subterminal line.
    a^1. Hind wing white, the terminal area sometimes suffused with brown, especially in female; fore wing pale.
      a^2. Fore wing with the stigmata and submedian fascia clear yellow ..... *cicatricosa.*
      b^2. Fore wing with the stigmata and submedian fascia ochreous white.
        a^3. Fore wing with the orbicular elongate and confluent with the reniform.
          a^4. Tegulæ without medial black line; fore wing with the cell suffused with rufous ..... *subspinifera.*
          b^4. Tegulæ with medial black line; fore wing with the cell suffused with black ..... *insertans.*
        b^3. Fore wing with the orbicular somewhat V-shaped, open above.
          a^4. Fore wing tinged with rufous ..... *neomexicana.*
          b^4. Fore wing not tinged with rufous..... *recula.*
        c^3. Fore wing with the orbicular oblong.
          a^4. Head, thorax, and fore wing tinged with reddish brown..... *segregata.*
          b^4. Head, thorax, and fore wing tinged with fuscous.
            a^5. Fore wing with the orbicular elongate, oblong. *brevipennis.*
            b^5. Fore wing with the orbicular short ..... *lætificans.*
        d^3. Fore wing with the orbicular rounded, entire.
          a^4. Tegulæ with the basal half ochreous or grey.
            a^5. Hind wing with terminal dark line and slight shade ..... *pugionis.*
            b^5. Hind wing with the terminal area suffused with brown ..... *quadridentata.*
          b^4. Tegulæ concolorous ..... *niveilinea.*
    b^1. Hind wing wholly suffused with brown.
      a^2. Fore wing with the orbicular narrow, oblique.
        a^3. Fore wing with the cell suffused with black ... *oblongistigma.*
        b^3. Fore wing with the cell not suffused with black.
          a^4. Thorax with prominent white band ..... *olivalis.*
          b^4. Thorax without white band ..... *plagigera.*
      b^2. Fore wing with the orbicular rounded, entire.
        a^3. Fore wing with the markings white..... *ridingsiana.*
        b^3. Fore wing with the markings ochreous white... *flavidens.*
  b. Fore wing with veins 3, 4, 6, 7 not defined by whitish indenting the subterminal line.
    a^1. Fore wing with the cell not filled in with black.
      a^2. Fore wing without medial shade.
        a^3. Tegulæ with prominent black medial line or shade.

a^4. Fore wing with the orbicular and reniform stigmata confluent, dark streaks in the interspaces.
a^5. Fore wing with white streaks on the veins... *biclavis.*
b^5. Fore wing with dark streaks on the veins.
a^6. Fore wing with pale apical patch and streak in submedian interspace..... *atristrigata.*
b^6. Fore wing without pale apical patch and streak in submedian interspace.
a^7. Fore wing with the grey costal area defined by brown suffusion below ..... *hollemani.*
b^7. Fore wing with the costal area concolorous.
a^8. Head, thorax, and fore wing reddish brown irrorated with black ..... *collocata.*
b^8. Head, thorax, and fore wing fuscous irrorated with grey. ..... *nevada.*
b^4. Fore wing with the orbicular and reniform not confluent.
a^5. Fore wing with the orbicular and reniform well-defined.
a^6. Fore wing with the claviform well-defined.
a^7. Fore wing with white streak on median nervure; hind wing white..... *acuminifera.*
b^7. Fore wing without white streak on median nervure; hind wing brown.
a^8. Fore wing with the postmedial line almost touching reniform ..... *submolesta.*
b^8. Fore wing with the postmedial line well separated from reniform ..... *procellaris.*
b^6. Fore wing with the claviform obsolescent.
a^7. Head, thorax, and fore wing fuscous irrorated with grey.
a^8. Tegulæ reddish at base ..... *flaviscapula.*
b^8. Tegulæ fuscous at base.
a^9. Fore wing with the stigmata defined by black.
a^{10}. Hind wing pure white ..... *candida.*
b^{10}. Hind wing tinged with fuscous ..... *sponsa.*
b^9. Fore wing with ochreous annuli to stigmata ..... *loya.*
b^7. Head, thorax, and fore wing ochreous brown ..... *bicollaris.*
b^5. Fore wing with the orbicular and reniform almost absolete... ..... *excogita.*
b^3. Tegulæ without well-defined medial black line or shade.
a^4. Fore wing fuscous grey to black.
a^5. Hind wing wholly suffused with fuscous brown.
a^6. Fore wing with pale annuli to stigmata; colour black ..... *punctigera.*
b^6. Fore wing with the stigmata defined by blackish.
a^7. Fore wing purplish fuscous..... *perpolita.*
b^7. Fore wing brownish fuscous.
a^8. Fore wing with the subbasal and terminal areas rusty brown ..... *finis.*
b^8. Fore wing with the subbasal and terminal areas concolorous ..... *perfusca.*
c^6. Fore wing with the stigmata almost obsolete; colour fuscous grey ..... *fumalis.*

b^5. Hind wing white, the terminal area only suffused with brown.
a^6. Fore wing black, the stigmata clearly defined ..... *velleripennis.*
b^6. Fore wing fuscous, the stigmata obscurely defined ..... *atomaris.*
b^4. Fore wing fuscous or dull reddish brown.
a^5. Fore wing with the orbicular oblique, elliptical.
a^6. Fore wing with the ante- and postmedial lines defined by grey ..... *adumbrata.*
b^6. Fore wing with the ante- and postmedial lines not defined by grey ..... *atrofusca.*
b^5. Fore wing with the orbicular round.
a^6. Fore wing fuscous brown, stigmata without whitish annuli ..... *stigmatilis.*
b^6. Fore wing reddish, stigmata with whitish annuli.
a^7. Hind wing of male white ..... *gagates.*
b^7. Hind wing of male brown ..... *dianthœciæ.*
c^6. Fore wing black-brown; stigmata small, whitish ..... *falclandica.*
c^4. Fore wing rufous irrorated with black.
a^5. Hind wing white, the terminal area tinged with fuscous ..... *misturata.*
b^5. Hind wing ochreous white, irrorated with fuscous ..... *mœrens.*
d^4. Fore wing rufous without black irroration.
a^5. Fore wing with the stigmata defined by black. *robiginosa.*
b^5. Fore wing with the stigmata faintly defined by ochreous ..... *exculta.*
e^4. Fore wing ochreous with a fulvous tinge.
a^5. Fore wing with the lines prominent, strongly dentate ..... *cursoriodes.*
b^5. Fore wing with the lines indistinct, slightly dentate.
a^6. Fore wing with the postmedial line entire, single ..... *heringi.*
b^6. Fore wing with the postmedial line represented by a double series of points on the veins ..... *serricornis.*
f^4. Fore wing ochreous brown more or less tinged with fuscous ..... *eremioides.*
g^4. Fore wing pale yellow ..... *citricolor.*
h^4. Fore wing with the ground-colour grey.
a^5. Fore wing more or less tinged with rufous.
a^6. Hind wing white with brownish terminal line ..... *farinosa.*
b^6. Hind wing white, the terminal area suffused with fuscous ..... *remota.*
c^6. Hind wing more or less wholly tinged with fuscous.
a^7. Fore wing rather long and narrow.
a^8. Fore wing with the stigmata whitish, prominent.
a^9. Fore wing with the subterminal line irregularly sinuous ..... *infracta.*
b^9. Fore wing with the subterminal line more even ..... *detersa.*
b^8. Fore wing with the stigmata concolorous, indistinct ..... *luteola.*
b^7. Fore wing shorter and broader ..... *tetrica.*

b^5. Fore wing without rufous tinge.
a^6. Fore wing with the stigmata defined by blackish.
a^7. Fore wing with the antemedial line double.
a^8. Fore wing with the terminal area dark... *fulda.*
b^8. Fore wing with the terminal area concolorous.
a^9. Fore wing grey-brown ..... *nævula.*
b^9. Fore wing luteous grey ..... *termessa.*
b^7. Fore wing with the antemedial line single.
a^8. Fore wing with the postmedial line strongly dentate ..... *detesta.*
b^8. Fore wing with the postmedial line minutely dentate..... *homicida.*
b^6. Fore wing with pale annuli to the stigmata.
a^7. Fore wing with luteous centres to the stigmata.
a^8. Palpi with black spot at sides; tarsi ringed with black ..... *contagionis.*
b^8. Palpi without black spot at sides; tarsi not ringed with black..... *tronella.*
b^7. Fore wing with the stigmata concolorous.
a^8. Fore wing grey irrorated with brown ... *confusa.*
b^8. Fore wing ochreous grey, the stigmata indistinct.
a^9. Fore wing with the lines distinct..... *subdecora.*
b^9. Fore wing with the lines indistinct ..... *acornis.*
c^8. Fore wing leaden grey, with prominent whitish markings ..... *birivia.*

b^2. Fore wing with medial shade.
a^3. Thorax clothed with hair only, prothorax without distinct crest.
a^4. Hind wing of male whitish or yellowish, in female more or less suffused with brown.
a^5. Fore wing with the ground-colour bluish or fuscous grey.
a^6. Fore wing strongly irrorated and marke with blood-red..... *cænis.*
b^6. Fore wing slightly tinged with rufous ..... *relaxa.*
c^6. Fore wing irrorated and marked with fuscous.
a^7. Fore wing with the stigmata not defined by black.
a^8. Fore wing with pale annuli to the stigmata ..... *vulpina.*
b^8. Fore wing with the stigmata obsolete ... *bostoniensis.*
b^7. Fore wing with the stigmata defined by black.
a^8. Fore wing tinged with red ..... *sessile.*
b^8. Fore wing not tinged with red ..... *testula.*
b^5. Fore wing ochreous suffused with brick-red . *tocoyæ.*
c^5. Fore wing with the ground-colour whitish luteous irrorated with fuscous..... *audentis.*
d^3. Fore wing with the ground-colour ochreous brownish.
a^6. Head and thorax ochreous white with hardly a trace of fuscous ..... *medialis.*
b^6. Head and thorax strongly irrorated with fuscous..... *feniseca.*

b^4. Hind wing suffused with brown in both sexes.
a^5. Fore wing with the orbicular and reniform distinct.
a^6. Fore wing pale brownish grey.
a^7. Fore wing irrorated with black ..... *grisescens.*
b^7. Fore wing irrorated with pale fuscous..... *decora.*
b^6. Fore wing pale bluish grey ..... *simplonia.*
c^6. Fore wing pale fuscous suffused with pale yellow ..... *culminicola.*
d^6. Fore wing pale luteous.
a^7. Fore wing suffused with grey ..... *vallus.*
b^7. Fore wing tinged with rufous ..... *luteosita.*
e^6. Fore wing dark grey, the reniform narrow . *extranea.*
f^6. Fore wing red-brown, the reniform large... *trifasciata.*
b^5. Fore wing with the orbicular and reniform obsolescent.
a^6. Fore wing ferruginous and black, the lines approximated, even ..... *bifasciata.*
b^6. Fore wing more uniform reddish, the lines well separated, the postmedial line strongly crenulate ..... *comosa.*
c^6. Fore wing ochreous yellow irrorated with fuscous ..... *dacota.*
b^3. Thorax clothed with hair and scales mixed; prothorax with distinct crest.
a^4. Fore wing with transverse striæ.
a^5. Tegulæ black at base ..... *brocha.*
b^5. Tegulæ not black at base ..... *trux.*
b^4. Fore wing without transverse striæ.
a^5. Tegulæ black at base ..... *psammophœa.*
b^5. Tegulæ not black at base.
a^6. Fore wing with the basal half grey, the terminal half suffused with black.
a^7. Size 44 mill.; fore wing with the basal and terminal areas strongly contrasting . *sculptilis.*
b^7. Size 36 mill.; fore wing with the basal and terminal areas slightly contrasting... *dædala.*
b^6. Fore wing with the basal and terminal areas pale rufous, the medial area grey... *murdoci.*
c^6 Fore wing concolorous.
a^7. Fore wing with more or less prominent pale streak on median nervure ..... *cursoria.*
b^7. Fore wing without pale streak on median nervure.
a^8. Fore wing dark reddish brown to fuscous brown.
a^9. Hind wing almost entirely white in male. *friabilis.*
b^9. Hind wing brown, pale towards base.
a^{10}. Tegulæ with more or less prominent dark medial line ..... *nigricans.*
b^{10}. Tegulæ without medial dark line.
a^{11}. Head, thorax, and fore wing fuscous brown ..... *nyctopis.*
b^{11}. Head, thorax, and fore wing deep red-brown ..... *intrita.*
c^9. Hind wing uniformly suffused with brown.
a^{10}. Tegulæ with distinct medial black line.
a^{11}. Fore wing tinged with rufous..... *rubefactalis.*
b^{11}. Fore wing tinged with purplish ..... *holoberba.*
b^{10}. Tegulæ without medial black line.
a^{11}. Fore wing with the claviform slightly defined, the medial shade indistinct. *intolerabilis.*

b^{11}. Fore wing with the claviform obsolete, the medial shade distinct ..... *brevirami.*
b^{8}. Fore wing grey-brown to grey or yellowish.
a^{9}. Fore wing thickly irrorated with fuscous.
a^{10}. Fore wing with well-defined series of dark dentate marks before the subterminal line.
a^{11}. Fore wing with the orbicular oblique, elliptical ..... *conspicua.*
b^{11}. Fore wing with the orbicular round. *septentrionalis.*
b^{10}. Fore wing without well-defined series of dentate dark marks before the subterminal line.
a^{11}. Hind wing wholly white.
a^{12}. Fore wing with the stigmata almost obsolete ..... *mitis.*
b^{12}. Fore wing with the stigmata well defined ..... *perturbata.*
b^{11}. Hind wing whitish, the terminal area suffused with brown.
a^{12}. Fore wing with the markings distinct.
a^{13}. Fore wing with the lines strong ... *objurgata.*
b^{13}. Fore wing with the lines fine.
a^{14}. Fore wing with the postmedial line prominently dentate ..... *messoria.*
b^{14}. Fore wing with the postmedial line minutely dentate ..... *tritici* abs. *siligi-*[*nis* & *eruta.*
b^{12}. Fore wing with the markings almost obsolete ..... *atropulverea.*
c^{11}. Hind wing nearly uniformly suffused with brown.
a^{12}. Fore wing with the claviform well-defined.
a^{13}. Fore wing with the orbicular and reniform with pale annuli ..... *hilaris.*
b^{13}. Fore wing with the orbicular and reniform without pale annuli ... *micronyx.*
b^{12}. Fore wing with the claviform represented by a few black scales, the lines double.
a^{13}. Fore wing grey-brown ..... *terrena.*
b^{13}. Fore wing leaden-grey ..... *laggance.*
c^{12}. Fore wing with the claviform obsolete.
a^{13}. Fore wing with the lines double... *ontario.*
b^{13}. Fore wing with the lines single ... *quinquelinea.*
b^{9}. Fore wing with or without slight dark irroration.
a^{10}. Hind wing almost wholly white in male.
a^{11}. Fore wing reddish yellow without dark irroration.
a^{12}. Fore wing with the lines distinct.
a^{13}. Tegulæ with medial dark line ..... *itodes.*
b^{13}. Tegulæ without medial dark line . *pedalis.*
b^{12}. Fore wing with the lines indistinct.
a^{13}. Fore wing with the orbicular obsolete..... *telebca.*
b^{12}. Fore wing with the orbicular represented by a pale annulus ..... *recticincta.*
b^{11}. Fore wing whitish luteous ..... *falerina.*

c^{11}. Fore wing ochreous with dark irroration ..... *cona.*
d^{11}. Fore wing grey with dark irroration.
a^{12}. Fore wing with the orbicular oblique, elliptical.
a^{13}. Fore wing with the reniform not filled in with fuscous ..... *conjuncta.*
b^{13}. Fore wing with the reniform filled in with fuscous ..... *nili.*
b^{10}. Hind wing whitish, the terminal area tinged with brown?
a^{11}. Frons with dark transverse line.
a^{12}. Fore wing whitish ochreous ..... *lineifrons.*
b^{12}. Fore wing creamy grey ..... *cerrvillei.*
b^{11}. Frons without dark transverse line.
a^{12}. Fore wing with the claviform slightly defined by black.
a^{13}. Fore wing with black streak below base of cell ..... *choris.*
b^{13}. Fore wing without black streak below base of cell ..... *mustelina.*
b^{12}. Fore wing with the claviform obsolete.
a^{13}. Fore wing with the lines fine.
a^{14}. Fore wing with the postmedial line incurved below vein 4 ..... *immixta.*
b^{14}. Fore wing with the postmedial line oblique below vein 4..... *denticulosa.*
b^{13}. Fore wing with the lines strong ... *fuscigera.*
c^{10}. Hind wing wholly tinged with brown.
a^{11}. Fore wing tinged with reddish or ochreous.
a^{12}. Fore wing with the lines distinct.
a^{13}. Fore wing with the medial shade prominent.
a^{14}. Fore wing with the terminal area dark.
a^{15}. Fore wing tinged with ochreous. *lutulenta.*
b^{15}. Fore wing tinged with reddish . *annulipes.*
b^{14}. Fore wing with the terminal area concolorous ..... *ternaria.*
b^{13}. Fore wing with the medial shade indistinct.
a^{14}. Fore wing triangular.
a^{15}. Fore wing with the orbicular and reniform with dark centres ... *insignata.*
b^{15}. Fore wing with the orbicular and reniform without dark centres . *brunneigera.*
b^{14}. Fore wing long and narrow ..... *dreuseni.*
b^{12}. Fore wing with the lines indistinct.
a^{13}. Fore wing tinged with reddish ... *fauna.*
b^{13}. Fore wing ochreous grey ..... *orbicularis.*
b^{11}. Fore wing brownish grey ..... *incalida.*

b^{1}. Fore wing with the cell black or dark between the stigmata.
a^{2}. Fore wing with the transverse lines distinct and prominently defined by grey .... *mollis.*
b^{2}. Fore wing with the transverse lines distinct, single; ground-colour grey.
a^{3}. Fore wing with the medial area suffused with blackish ..... *opipara.*

b^3. Fore wing with the medial area concolorous.
a^4. Tegulæ with black band; fore wing with black streak below base of cell ..... *tristicula.*
b^4. Tegulæ without black band; fore wing without black streak below base of cell.
a^5. Pectus with the hair pale ..... *munis.*
b^5. Pectus with the hair blackish ..... *dissona.*
c^2. Fore wing with the transverse lines double, rarely obsolete.
a^3. Fore wing without black streak below base of cell.
a^4. Fore wing with the ground-colour bluish white..... *vetusta.*
b^4. Fore wing with the ground-colour bright blue-grey ..... *malis.*
c^4. Fore wing with the ground-colour pale greyish yellow ..... *enteridis.*
d^4. Fore wing with the ground-colour pale rufous. *alticola.*
e^4. Fore wing with the ground-colour grey-brown to purplish red-brown or blackish.
a^5. Hind wing entirely suffused with brown.
a^6. Fore wing with the orbicular open above.
a^7. Fore wing with the basal area not whitish.
a^8. Fore wing with the cell slightly tinged with black.
a^9. Fore wing with the orbicular elliptical, defined by black below.
a^{10}. Fore wing with whitish annuli to the stigmata ..... *cariosa.*
b^{10}. Fore wing with grey-brown annuli to the stigmata ..... *infausta.*
b^9. Fore wing with the orbicular oblong, open below..... *megastigma.*
b^8. Fore wing with the cell distinctly suffused with black.
a^9. Fore wing brown.
a^{10}. Fore wing grey-brown, the medial area concolorous ..... *noctuiformis.*
b^{10}. Fore wing brown, the medial area darker ..... *basiflava.*
b^9. Fore wing purplish red irrorated with grey.
a^{10}. Fore wing with reddish annuli to the stigmata..... *negrita.*
b^{10}. Fore wing with whitish annuli to the stigmata..... *collata.*
c^9. Fore wing ferruginous red..... *levisi.*
b^7. Fore wing with the basal area whitish ... *basalis.*
b^6. Fore wing with the orbicular not open above.
a^7. Tegulæ without dark band.
a^8. Fore wing with the colour ferruginous ... *solitaria.*
b^8. Fore wing with the colour grey ..... *rena.*
b^7. Tegulæ with blackish band.
a^8. Fore wing with the cell slightly tinged with black.
a^9. Fore wing with the veins streaked with black, the interspaces with brown ..... *melanoneura.*
b^9. Fore wing with the veins and interspaces not streaked.
a^{10}. Tegulæ with the basal half black ..... *australea.*

b^{10}. Tegulæ with black medial line.
a^{11}. Fore wing slightly irrorated with black.
a^{12}. Fore wing with the terminal area concolorous ..... *satis.*
b^{12}. Fore wing with the terminal area blackish ..... *nostra.*
b^{11}. Fore wing strongly irrorated with black ..... *reuda.*
b^{8}. Fore wing with the cell prominently black.
a^{9}. Fore wing with the medial area darker than the ground-colour, strongly tinged with purplish, and the thorax usually with red ..... *decolor.*
b^{9}. Fore wing with the medial area concolorous; thorax greyer, not tinged with red.
a^{10}. Fore wing not irrorated with white, the stigmata not filled in with white ... *tessellata.*
b^{10}. Fore wing partly irrorated with white, the stigmata filled in with white..... *intrusa.*
b^{5}. Hind wing of male white with brown terminal line, of female wholly suffused with brown . *albipennis.*
c^{5}. Hind wing of both sexes white, the terminal area tinged with brown.
a^{6}. Fore wing lilacine grey.
a^{7}. Fore wing not irrorated with brown ..... *verticalis.*
b^{7}. Fore wing irrorated with brown ..... *recussa.*
b^{6}. Fore wing red-brown suffused with grey ... *neotelis.*
c^{6}. Fore wing dark red-brown tinged with fuscous. *titubatis.*
d^{6}. Fore wing ochreous irrorated with brown.
a^{7}. Fore wing with the claviform defined at extremity only ..... *pallipennis.*
b^{7}. Fore wing with the claviform prominently dark ..... *hispidula.*
d^{5}. Hind wing entirely white ..... *biliturata.*

b^{3}. Fore wing with black streak below base of cell.
a^{4}. Fore wing without brown streaks in the interspaces.
a^{5}. Fore wing without ochreous and black fasciæ in discal and submedian folds.
a^{6}. Fore wing with the ground-colour ochreous to purplish red.
a^{7}. Fore wing with the costal area concolorous.
a^{8}. Fore wing not suffused with fuscous.
a^{9}. Expanse 42–46 mill. ..... *ochrogaster.*
b^{9}. Expanse 26–42 mill. ..... *tritici* ab. *aquilina.*
b^{8}. Fore wing suffused with fuscous..... *compressipennis.*
b^{7}. Fore wing with the costal area whitish to postmedial line.
a^{8}. Fore wing without whitish streaks from claviform and before subterminal line... *obeliscoides.*
b^{8}. Fore wing with whitish streaks from claviform and before subterminal line.
a^{9}. Expanse 44–46 mill. ..... *excellens.*
b^{9}. Expanse 26–42 mill. ..... *tritici.*
b^{6}. Fore wing with the ground-colour grey-brown to grey.
a^{7}. Fore wing with the orbicular oblique, oblong.
a^{8}. Fore wing with the black streak below cell and black in cell prominent.
a^{9}. Hind wing ochreous white..... *pindar.*
b^{9}. Hind wing tinged with fuscous..... *idahoensis.*

b^{5}. Fore wing with the black streak below cell and black in cell slight.
a^{9}. Fore wing with the median nervure streaked with grey ..... *factoris.*
b^{9}. Fore wing with the median nervure not streaked with grey ..... *feminalis.*
b^{7}. Fore wing with the orbicular V-shaped.
a^{8}. Fore wing without oblique ochreous streak from end of claviform; hind wing wholly suffused with brown..... *furtiva.*
b^{8}. Fore wing with oblique ochreous streak from end of claviform; hind wing yellowish white towards base..... *vanidica.*
c^{7}. Fore wing with the orbicular round or oblique, elliptical.
a^{8}. Fore wing with the lines obsolete.
a^{9}. Fore wing with the orbicular open above. *basigramma.*
b^{9}. Fore wing with the orbicular entire..... *infusa.*
b^{8}. Fore wing with the lines present.
a^{9}. Hind wing of male white, the termen very slightly tinged with brown..... *vitta.*
b^{9}. Hind wing of male whitish, the terminal area suffused with brown.
a^{10}. Fore wing with more or less prominent pale streak on median nervure . *islandica.*
b^{10}. Fore wing without pale streak on median nervure.
a^{11}. Fore wing with the ground-colour grey-brown.
a^{12}. Fore wing with pale annuli to the stigmata ..... *henrietta.*
b^{12}. Fore wing without pale annuli to the stigmata ..... *atrifera.*
b^{11}. Fore wing with the ground-colour grey.
a^{12}. Fore wing with the lines prominent.
a^{13}. Tegulæ white with black tips ..... *vestermanni.*
b^{13}. Tegulæ rufous at base ..... *laminis.*
c^{13}. Tegulæ not rufous at base..... *tesselloides.*
b^{12}. Fore wing with the lines almost obsolete.
a^{13}. Tegulæ grey at base ..... *silens.*
b^{13}. Tegulæ ochreous at base ..... *sclenis.*
c^{9}. Hind wing wholly suffused with brown.
a^{10}. Fore wing with prominent white streak on median nervure.
a^{11}. Fore wing with the reniform not produced inwards on median nervure.
a^{12}. Fore wing rufous..... *divergens.*
b^{12}. Fore wing blackish mixed with grey. *nordica.*
b^{11}. Fore wing with the reniform produced inwards on median nervure and confluent with orbicular or nearly so... *fusimacula.*
b^{10}. Fore wing without white streak on median nervure.
a^{11}. Tegulæ blue-grey with carmine medial line ..... *cæsia.*
b^{11}. Tegulæ blue-grey at base, rufous at tips ..... *redimicula.*
c^{11}. Tegulæ not blue-grey at base.
a^{12}. Fore wing with the area between postmedial and subterminal lines prominently pale ..... *acutifrons.*

b^{12}. Fore wing with the postmedial area nearly concolorous ..... *striigilis.*
d^{7}. Fore wing with the orbicular obsolete ..... *servita.*
b^{5}. Fore wing with ochreous and black fasciæ in discal and submedian folds ..... *pictifascia.*
b^{4}. Fore wing with brown streaks in the interspaces.
a^{3}. Fore wing with the orbicular and reniform present ..... *axiliodes.*
b^{3}. Fore wing with the orbicular and reniform obsolete ..... *lineifera.*

337. Euxoa vilsoni. (Plate LXI. fig. 16.)

Agrotis wilsonii, Grote, Bull. Buff. Soc. i. p. 135, pl. 4. f. 3 (1873); Smith, Cat. Noct. N. Am. p. 88.
Agrotis specialis, Grote, Bull. Buff. Soc. ii. p. 62 (1874); id. Ill. Essay, 54, pl. 2. f. 14 (1882).
Agrotis æqualis, Harv. Can. Ent. viii. p. 36 (1876).

Head and thorax varying from grey-brown to chestnut; palpi with black mark on side of 2nd joint; legs with black hair mixed; abdomen grey. Fore wing grey-brown, often tinged with chestnut except costal area; an oblique subbasal grey striga below cell; the antemedial line obsolete towards costa, angled inwards on median nervure, strongly excurved in submedian interspace, then acutely angled outwards to inner margin, or obsolete; the orbicular and reniform grey often edged with black and with fuscous centres, the former oblique, elliptical, or with its lower extremity produced; the claviform outlined with black, moderate; the subterminal line angled outwards at vein 6, strongly inwards at vein 5, then dentate, the area beyond it more or less tinged with fuscous; a terminal series of black points. Hind wing grey-brown, the terminal area rather deeper; cilia white; underside whitish, the costal area and termen irrorated with brown; a black discoidal spot.

Ab. 1. *specialis.* Head, thorax, and ground-colour of fore wing bright chestnut-red.

Hab. U.S.A., Colorado, Glenwood Springs, California, 2 ♂, 3 ♀, type ♂ *specialis* and ♀ type, and type *æqualis*, S. Francisco, 1 ♂.
Exp. 44 millim.

Larva. Dyar, Proc. Ent. Soc. Wash. iv. p. 317 (1899).

Head 3·6 mm., pale brown, reticulations very obscure, paler than the ground-colour, vertical band obsolete above and below, existing as a dash beside the clypeus; body green, lined with white; dorsal, subdorsal, and lateral lines rather narrow, straight, transversely cut into blotches; substigmatal line broad, obscurely double, narrowly green-centered. Feet pale; spiracles black. Feeds on plants near the sea-coast.—H. G. D.

338. Euxoa lacunosa. (Plate LXI. fig. 17.)

Agrotis lacunosa, Grote, Bull. Geol. Surv. iv. p. 172 (1878); Smith, Cat. Noct. N. Am. p. 88.

♂. Head and thorax grey-brown; palpi with some black at sides; frons with black band; tegulæ with black band; pectus,

legs, and abdomen grey-white, the legs streaked with black, the tarsi banded with black, and the abdomen dorsally tinged with brown. Fore wing grey-brown with a rufous tinge; a sinuous black streak on median nervure from base to the antemedial line which is obsolescent towards costa and inner margin, angled inwards on median nervure, then excurved and with the claviform stigma on its outer edges, this being either vitta-shaped with black outline or small and solid; the orbicular well-developed, oblique, with black outline; the reniform well-developed, with pale line inside its black outline; the postmedial line minutely dentate, indistinct, strongly excurved from below costa to vein 4, then oblique; an obscure dentate subterminal line bent inwards at veins 5, 6, and with four dentate black marks on its inner edge, the area beyond it tinged with fuscous; a crenulate black terminal line; a fine pale line at base of cilia, which are grey pencilled with fuscous. Hind wing white, the veins and termen brown; underside with discoidal point, the costal area irrorated with brown.

Hab. U.S.A., California, 2 ♂ Grote Coll. type. *Exp.* 40 millim.

339. Euxoa cicatricosa. (Plate LXI. fig. 18.)

Agrotis cicatricosa, Grote & Rob. Proc. Ent. Soc. Phil. iv. p. 492, pl. 3. f. 4 (1865); Smith, Cat. Noct. N. Am. p. 88.

♀. Head and thorax white; the vertex of head and terminal part of tegulæ tinged with fawn-colour, the thorax slightly tinged with purplish grey; pectus, legs, and abdomen white. Fore wing grey-brown; a white fascia below costa, to which it extends near base, tapering to a point beyond middle; some blackish antemedial and postmedial points on costa; a rounded black-edged yellowish spot below base of cell with its outer edge somewhat indented below median nervure; claviform a small black vitta and a small vitta with yellowish before it on inner margin; the orbicular and reniform yellowish, the former somewhat V-shaped, the latter large, prominent; an oblique yellowish fascia below vein 2 from middle of median nervure to subterminal line; the postmedial line formed of small dentate black marks, slightly angled outwards at vein 6, then oblique; whitish streaks on veins 3, 4 from cell to the indistinct dentate subterminal line, where they form two stronger teeth; a broad yellowish band between the postmedial and subterminal lines bent outwards to apex; a terminal series of small black lunules; cilia yellowish white, with a few brown-tipped scales. Hind wing white, the veins and medial part of termen sometimes tinged with brown.

Hab. U.S.A., Nevada, 1 ♀, Grote Coll., California (*Walsingham*), 1 ♀. *Exp.* 30–34 millim.

340. Euxoa subspinifera, n. sp. (Plate LXI. fig. 19.)

♂. Head and thorax ochreous mixed with white; abdomen ochreous, the ventral surface whitish irrorated with pale brown.

Fore wing whitish, suffused with yellow-brown above submedian fold, in end of cell and above veins 2 to 6; the veins with slight dark streaks; the costa irrorated with fuscous with double dark striæ representing the subbasal, ante- and postmedial lines, and some white points towards apex; claviform elongate and defined by black; orbicular and reniform defined by black, the former very elongate and confluent with reniform; the subterminal line represented by a series of small whitish lunules, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; cilia ochreous, with a slight dark line through them. Hind wing white, the veins and a fine terminal line ochreous.

Hab. PUNJAB, Firozpur (*Nurse*), 1 ♂ type. *Exp.* 32 millim.

*341. Euxoa insertans. (Plate LXIX. fig. 10.)

Agrotis insertans, Smith, Trans. Am. Ent. Soc. xvii. p. 45 (1893); id. Cat. Noct. N. Am. p. 89.

♂. Rather sordid yellow; tegulæ with black medial line, the tips sometimes more dusky; thorax mixed with black scales; patagia incompletely edged with black. Fore wing with the subbasal line obsolete; the antemedial line represented by a curved striga below the claviform; a black streak below base of cell confluent with the black-outlined claviform; orbicular with fuscous centre, elongate, and connected by a spur with the reniform, a continuous black line defining both; cell black before and between the stigmata; a black spot below reniform; postmedial line obsolete; subterminal line pale, dentate to termen on veins 7, 6, 4, 3, with distinct black intermediate dashes. Hind wing pure white; the underside with slight dark irroration.

Hab. CANADA, Br. Columbia, Spencer's Bridge. *Exp.* 33 millim. This species is unknown to me, figured from a drawing from type in Brooklyn Inst. Arts & Sci.

342. Euxoa neomexicana. (Plate LXI. fig. 20.)

Carneades neomexicana, Smith, Bull. U.S. Nat. Mus. no. 38, p. 218 (1890); id. Cat. Noct. N. Am. p. 88.

Head and thorax grey-white mixed with rufous; tegulæ white at base and extremity, with dark medial line followed by a rufous band; patagia white on outer side; thoracic tuft white; abdomen white, dorsally tinged with ochreous towards extremity. Fore wing ochreous white suffused with rufous; the costal area grey-white; the subbasal line indistinct from costa to submedian fold, angled outwards in cell and submedian fold and inwards on median nervure; the claviform represented by a slight rufous streak; the orbicular and reniform whitish, with rufous centres and brown outline, the former oblique, oblong, open above, the latter with some fuscous at its lower end; the postmedial line indistinct, bent outwards below costa, excurved to vein 3, then oblique; veins 3, 4 with dark streaks outlined with white; the subterminal line whitish, dentate, more strongly at veins 7, 4, 3; a terminal series

of dark points. Hind wing yellowish white, the veins brownish, the terminal area tinged with brown.

Hab. U.S.A., New Mexico, Lamy (*Cockerell*), 1 ♂. *Exp.* 36 millim.

343. **Euxoa recula.** (Plate LXI. fig. 21.)

Agrotis recula, Harv. Can. Ent. viii. p. 37 (1876); Smith, Cat. Noct. N. Am. p. 88.

Head, thorax, and abdomen white mixed with brown; palpi with some black scales above; patagia with some black scales at extremity. Fore wing mixed black and brown; an ochreous-white fascia below costa narrowing to a point beyond middle; an antemedial semicircular mark below the cell opening downwards; no trace of the antemedial line; the orbicular and reniform large, ochreous white; an oblique ochreous-white fascia in submedian interspace from near the semicircular mark to near subterminal line, its inner extremity pointed; the postmedial line indistinct, blackish, angled outwards on veins 6 and 4, then oblique and punctiform; an ochreous-white subterminal line excurved at middle developed into a spot below apex, and with a series of dentate black marks on its inner edge; cilia white and brown. Hind wing white, the veins, inner and terminal areas suffused with brown.

Hab. U.S.A., Oregon, 3 ♂, 2 ♀ type, Colorado, Utah, Nevada, 1 ♂, 1 ♀ Grote Coll., California (*Walsingham*), 1 ♂, 1 ♀. *Exp.* 28 millim.

344. **Euxoa segregata.** (Plate LXI. fig. 22.)

Carneades segregata, Smith, Trans. Am. Ent. Soc. xxi. p. 47, pl. iv. f. 6 (1894).

Head and thorax pale brownish ochreous mixed with grey and black; tegulæ with black medial line; abdomen pale ochreous irrorated with black. Fore wing ochreous white, rather sparsely irrorated with black and tinged in places with reddish brown; a subbasal black point below the cell followed by a slight blackish streak; the antemedial line double, sinuous from cell to vein 1, obsolete on costal and inner areas; claviform outlined with black; the cell before and between the stigmata brown; the orbicular and reniform with brown centres, whitish annuli and black outline, the former oblique, elliptical, open above, the latter moderate; traces of an oblique medial shade from cell to inner margin; the postmedial line very indistinct; minutely dentate, bent outwards below costa, excurved to vein 3, then incurved; the subterminal line bent outwards to apex and tornus and excurved at middle, with some dentate black marks on its inner side at middle, the area beyond it fuscous indented by the pale streaks defining veins 3, 4; a terminal series of black points. Hind wing white, the veins and terminal area tinged with brown; a discoidal point and terminal series.

Hab. U.S.A., Washington Terr., Colorado, Oregon, 2 ♀, California (*Walsingham*), 1 ♂, Arizona, 1 ♂. *Exp.* 38 millim.

345. Euxoa brevipennis. (Plate LXI. fig. 23.)

Agrotis brevipennis, Smith, P. U.S. Nat. Mus. x. p. 455 (1887); id. Cat. Noct. N. Am. p. 89.

♂. Head and thorax dark brown mixed with rufous, the scales tipped with white; tegulæ with medial black line; abdomen grey-brown, the anal tuft ochreous. Fore wing greyish suffused with brown and with fuscous in cell and on terminal area; an indistinct pale subcostal fascia extending to beyond middle and a streak on median nervure; the antemedial line indistinct, double, obsolete except in submedian interspace where it is angled inwards below median nervure, then excurved and with the distinct black-edged claviform on its outer edge; the orbicular and reniform pale-ringed, defined by a black line, the former oblique, oblong, open above, the latter well developed, constricted at middle; some pale points on terminal half of costa; postmedial line entirely obsolete; the subterminal line pale, developed into an obscure pale patch at apex and strongly dentate on veins 4, 3; a waved black terminal line; cilia brown, with a pale line at base. Hind wing white, the veins and a terminal line brownish; the underside with discoidal spot, the costal area irrorated with brown.

Hab. U.S.A., Colorado (*Bruce*), 1 ♂, Nevada, California. *Exp.* 40 millim.

346. Euxoa lætificans. (Plate LXI. fig. 24.)

Carneades lætificans, Smith, Trans. Am. Ent. Soc. xxi. p. 48, pl. v. f. 3 (1894).

♂. Head and thorax dark brown and fuscous mixed with grey; tarsi banded with black; abdomen grey, dorsally tinged with fuscous. Fore wing dull brown; the costal area ochreous to the postmedial line, the inner area ochreous; the subbasal line represented by ochreous striæ from costa and median nervure, the latter with black point on its inner side and some black beyond it before the antemedial line, which is obsolete except from cell to vein 1 and angled outwards in submedian fold; claviform moderate, prominently defined by black, with an ochreous fascia from it to subterminal line; orbicular and reniform with brownish centres and ochreous annuli defined by black, the former oblique, elliptical; the terminal area suffused with fuscous; the subterminal line indistinct, ochreous, angled outwards at vein 7, excurved and somewhat dentate at middle, defined on inner side by some dentate black marks at middle; a fine terminal black line; cilia ochreous at base, greyish at tips with a dark line through them. Hind wing pure white, with fine terminal brownish line; the underside with the costal area slightly irrorated with brown, a slight discoidal point and some postmedial points on veins of costal area.

Hab. U.S.A., Colorado, Glenwood Springs (*Barnes*), 1 ♂. *Exp.* 36 millim.

347. Euxoa pugionis. (Plate LXI. fig. 25.)

Carneades pugionis, Smith, Pr. U.S. Nat. Mus. xxii. p. 419 (1900).

♂. Head and thorax ochreous white mixed with reddish brown; abdomen grey, dorsally tinged with fuscous. Fore wing red-brown; the costal area yellowish white to near apex; the inner area yellowish white; two subbasal black points below cell; the antemedial line black, obsolete except from subcostal nervure to vein 1 and angled inwards on median nervure; claviform slightly defined by black with a yellowish fascia from it to subterminal line; orbicular and reniform with brownish centres and yellowish annuli defined by black, the former oblique elliptical, open above; median nervure streaked with white; the postmedial line punctiform, black, bent outwards below costa, incurved at discal fold and below vein 4, obsolete below vein 1; veins 3, 4, 6, 7 defined by dentate white streaks to near termen intersecting the subterminal line, which is represented by a series of small dentate black spots in the interspaces; a terminal series of small black lunules; cilia yellowish at base, brownish at tips. Hind wing pure white, the termen very slightly tinged with brown.

Hab. Canada, Br. Columbia, Calgary, 1 ♂; U.S.A., Colorado (*Bruce*), 1 ♂. *Exp.* 30 millim.

348. Euxoa quadridentata. (Plate LXI. fig. 26.)

Agrotis quadridentata, Grote & Rob. Proc. Ent. Soc. Phil. iv. p. 491, pl. 3. ff. 2, 3 (1865); Smith, Cat. Noct. N. Am. p. 89.

♂. Head and thorax grey mixed with dark brown and black; tegulæ with ochreous band in front and tipped with white: abdomen ochreous white, dorsally more or less irrorated with brown. Fore wing greyish brown; a whitish fascia below costa extending to costa at base and ending in streaks on the veins beyond middle; streaks on median nervure and veins 3, 4; an ochreous fascia on inner margin; two oblique black striæ below base of cell; the antemedial line consisting of an oblique black line across cell and a line angled outwards below cell and confluent with the well-developed black-edged claviform; the orbicular and reniform whitish tinged with brown and black-edged, the former oblique, elliptical, the latter well developed; an ochreous fascia in submedian fold from below middle of cell to near subterminal line; the postmedial line black, very oblique from costa to vein 6, angled outwards on veins 6 and 5, then as an oblique series of small dentate marks; the subterminal line consisting of a series of small dentate black marks obsolete towards costa and inner margin and with two dentate white marks on it below apex; cilia white, with three brown lines through them. Hind wing white, the vein and terminal area brownish; a discoidal point sometimes present.

Hab. U.S.A., Oregon, Colorado (*Snow*), 1 ♂, California (*Walsingham*), 2 ♂. *Exp.* 30–36 millim.

349. Euxoa niveilinea. (Plate LXI. fig. 27.)

Agrotis niveilinea, Grote, Can. Ent. xiv. p. 216 (1882); Smith, Cat. Noct. N. Am. p. 89.

Head and thorax grey and brown; vertex of head, terminal half of tegulæ and edges of patagia mixed with black; tegulæ tipped with white; thorax with a white patch on dorsum; pectus, legs, and abdomen white, the legs irrorated with brown. Fore wing yellowish brown; a subcostal white fascia tapering to a point beyond middle; the median nervure, veins 3, 4, 6, 7, and the terminal part of vein 1 defined by fine white streaks; a white-edged subbasal diamond-shaped mark below cell open above and below, its outer edge formed by the antemedial line which is otherwise obsolete, and with the black-edged vitta-shaped claviform on its outer edge; the orbicular and reniform white with brownish centres and blackish edges, the former oblique elliptical, the latter well developed; an oblique brownish-white fascia in submedian interspace from below middle of cell to postmedial line, which is grey and oblique from costa to vein 6, then brownish, minutely dentate and inwardly oblique; the subterminal line brownish, minutely dentate, angled inwards below costa and incurved below vein 3; a fine pale terminal line. Hind wing white, the veins and termen tinged with brown; faint traces of a postmedial line.

Hab. U.S.A., Nebraska, Kansas, 1 ♂, Grote Coll., Texas, Colorado (*Bruce*), 1 ♀, New Mexico. *Exp.*, ♂ 32, ♀ 34 millim.

350. Euxoa oblongistigma. (Plate LXI. fig. 28.)

Agrotis oblongistigma, Smith, Pr. U.S. Nat. Mus. x. p. 454 (1887); id. Cat. Noct. N. Am. p. 89.

♂. Head and basal part of tegulæ grey-brown, thorax dark brown; tegulæ with medial black line; pectus, legs, and abdomen grey largely mixed with brown, the anal tuft ochreous. Fore wing pale brownish; a black streak below basal part of cell; the ante- and postmedial lines obsolete; claviform filled in with black; orbicular and reniform concolorous, defined by black before and between them, the former oblique, open above, the latter narrow, lunulate; the subterminal line indistinct, pale, with dentate black marks on inner side of its medial part, expanding into a bidentate mark at vein 6 and crossed by pale streaks on each side of veins 3, 4; an obscure pale streak from below medial part of cell to subterminal line; cilia pale, with two brown lines through them. Hind wing fuscous brown, the disk whitish; cilia white; the underside with discoidal lunule.

Hab. U.S.A., Montana, Black Hills, Colorado (*Bruce*), 2 ♀, Twin Lakes (*Cockerell*), 1 ♂, California, Nevada Co., 1 ♀. *Exp.* 36 millim.

351. Euxoa olivalis. (Plate LXI. fig. 29.)

Agrotis olivalis, Grote, N. Am. Ent. i. p. 43 (1879); Smith, Cat. Noct. N. Am. p. 89.

♀. Head, thorax, and abdomen dark brown; tegulæ with black medial line; thorax with whitish band behind tegulæ; pectus, legs, and ventral surface of abdomen irrorated with grey. Fore wing dark olive-brown; a whitish fascia below costa and in base of cell ending in a point beyond middle; the antemedial line angled inwards on median nervure and vein 1 and outwards in submedian fold and above inner margin where it is whitish; claviform large, elongate, defined by black; orbicular and reniform white-edged and defined by black, the former narrow and very oblique, the latter well developed; the subterminal line grey with dentate black marks on its inner side and crossed by grey dentate marks on veins 7, 6, 4, 3, 1; a terminal series of black lunules; cilia brown, with a darker line through them. Hind wing brown; the cilia white, with a brown line at base. Underside of both wings with discoidal spot and curved postmedial and subterminal lines.

Hab. U.S.A., Colorado (*Snow*), 1 ♀ type. *Exp.* 32 millim.

352. Euxoa plagigera. (Plate LXI. fig. 30.)

Agrotis plagigera, Morr. Proc. Bost. Soc. N. H. xvii. p. 163 (1874); id. Proc. Ac. Nat. Sci. Phil. 1875, p. 57; Smith, Cat. Noct. N. Am. p. 89.

♀. Head and thorax grey, mixed with dark brown; tegulæ whitish in front, with black medial line; pectus, legs, and abdomen grey mixed with brown. Fore wing fuscous brown, suffused with grey; a grey fascia below costa ending in a point beyond middle; an ill-defined black streak below base of cell; the antemedial line oblique, obsolete on costal area, angled inwards on median nervure and vein 1 and outwards in submedian fold and above inner margin; an oblique white streak in base of cell to upper edge of orbicular, which is oblique, narrow and open above; the orbicular and reniform with white annuli defined by a black line; the claviform outlined in black; the postmedial line indistinct, dentate, excurved from below costa to vein 3, then oblique, with a grey streak before it in submedian interspace from below middle of cell and a grey shade beyond it, emitting streaks below veins 7, 6, 4, 3 to the subterminal line, which is grey and angled outwards on veins 4 and 3; a terminal series of black lunules; cilia grey with two brown lines through them. Hind wing dirty whitish suffused with brown, leaving the disk rather paler; the veins brown; the cilia white; the underside with indistinct discoidal lunule and curved postmedial line.

Hab. U.S.A., Washington, Illinois, Kansas, Nebraska, 1 ♀ Grote Coll., Montana, Colorado, 1 ♀, Nevada, California, Sanzalito, 1 ♀. *Exp.* 34–38 millim.

353. Euxoa ridingsiana. (Plate LXI. fig. 31.)

Agrotis ridingsiana, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 305 (1875); Smith, Cat. Noct. N. Am. p. 90.

Head and thorax dark brown; tegulæ paler at base and with a black medial line; abdomen brown, the anal tuft rufous. Fore wing dark brown tinged with grey; a grey subcostal fascia ending in a point beyond middle; the median nervure and base of veins 3, 4 streaked with grey; the antemedial line grey, defined by black on outer side, obsolete on costal area, angled inwards on median nervure and vein 1, excurved in submedian interspace and above inner margin; the orbicular and reniform with flesh-coloured annuli defined by black, the former rounded, the latter well developed; claviform large, black-edged, with a flesh-coloured streak from it to the postmedial line, which is formed by small dentate black marks, excurved from below costa to vein 3, then oblique; the subterminal line flesh-coloured, sinuous, excurved at middle and with dentate black marks on its inner side; a waved terminal black line; cilia brown, fuscous at base. Hind wing brown, the veins and terminal area darker; cilia white, with brownish line at base.

Hab. U.S.A., Colorado, 1 ♂, 1 ♀ type, Grote Coll., 1 ♀ (*Cockerell*), New Mexico, Arizona. *Exp.* 34 millim.

354. Euxoa flavidens. (Plate LXI. fig. 32.)

Agrotis flavidens, Smith, Pr. U.S. Nat. Mus. x. p. 455 (1887); id. Cat. Noct. N. Am. p. 90.

♂. Head and thorax dark brown, mixed with some ochreous and grey; tegulæ with the basal half ochreous mixed with brown and bounded by a medial black line; abdomen grey-brown. Fore wing yellowish white suffused with dark brown, except on costal area to postmedial line and on inner area; some black suffusion below base of cell; the antemedial line obsolete except between median nervure and vein 1, where it is angled outwards in submedian fold; claviform elongate, slightly defined by black, and with a yellowish streak from its extremity to subterminal line; orbicular and reniform yellowish defined by black and with brownish centres, the former nearly round, the cell before and between them suffused with black; the postmedial line represented by an indistinct series of black points bent outwards below costa, slightly incurved in discal fold and oblique below vein 4, dentate yellowish marks defining veins 3, 4, 6, 7 extending from it to near termen; the subterminal line represented by a series of small black spots, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points; cilia yellowish, with two brownish lines through them. Hind wing yellowish white, the terminal area suffused with fuscous brown; the cilia white; the underside white, with the costal and terminal areas slightly irrorated with brown and a slight discoidal brown line.

♀. Hind wing wholly suffused with brown.

Hab. U.S.A., Colorado, 1 ♂, Nevada, 1 ♀, New Mexico, Arizona. *Exp.* 36 millim.

355. Euxoa biclavis. (Plate LXII. fig. 1.)

Agrotis biclavis, Grote, Bull. Geol. Surv. v. p. 206 (1879); id. Ill. Essay, 53, pl. i. f. 12 (1882); Smith, Cat. Noct. N. Am. p. 91.

♂. Head, thorax, and abdomen white, very slightly tinged with brown; tarsi banded with brown. Fore wing white, slightly suffused in places with brown, especially in lower part of cell, below the cell, on middle of inner area and on terminal area; a slightly sinuous black streak from base in submedian fold to the large elongate black-edged claviform; orbicular and reniform white, black-edged, a short black streak in cell to the orbicular, which is produced on outer side and confluent with the reniform, which has its lower extremity produced inwards on median nervure so that it is somewhat S-shaped and is centred with brown; no trace of the ante- and postmedial lines; the veins of terminal area pure white; the subterminal line represented by two obliquely-placed black striæ from termen below apex to vein 5, then a series of small dentate marks to vein 2; a fine terminal black line. Hind wing pure white, with slight brown shade on veins.

♀. Considerably more suffused with brown; the inner half of hind wing tinged with brown.

Hab. U.S.A., Arizona, Tucson 1 ♂, 1 ♀ type Grote Coll. *Exp.* ♂ 36, ♀ 40 millim.

*356. Euxoa atristrigata. (Plate LXIX. fig. 11.)

Carneades atristrigata, Smith, Bull. U.S. Nat. Mus. 38, p. 150 (1890); id. Cat. Noct. N. Am. p. 91.

♂. Ashen grey irrorated with black; tegulæ with black medial line. Fore wing thickly irrorated with black; the lines obsolete; orbicular narrow, elongate and confluent with the small erect reniform; a pale shade from end of cell to apex; veins 3, 4 marked with white to near termen; cilia intersected with white. Hind wing white, the terminal area broadly tinged with fuscous.

Hab. Canada, N.W. Br. Columbia. *Exp.* 30 millim. This species is unknown to me, figured from a drawing from type in Brooklyn Inst. Arts & Sci.

357. Euxoa hollemani. (Plate LXII. fig. 2.)

Agrotis hollemani, Grote, Can. Ent. vi. p. 156 (1874); Smith, Cat. Noct. N. Am. p. 91.

Head and thorax grey mixed with brown; palpi blackish at sides; some black hair between bases of antennæ; tegulæ with black medial line; patagia sometimes edged with blackish above; abdomen grey, dorsally with a slight ochreous tinge. Fore wing grey-brown, the area just below and beyond the cell reddish brown; a sinuous black streak below basal half of cell; the orbicular grey, black-edged, diamond-shaped, confluent with the grey costal area and with its outer angle usually produced and confluent with the

reniform, which is grey defined by black and with brown centre, the cell before and beyond the reniform blackish; no trace of the ante- and postmedial lines; the subterminal line angled outwards below costa, inwards at vein 5, then strongly dentate, the area beyond it brown except at apex; a terminal series of black points. Hind wing white in male, the veins and termen tinged with brown, in female wholly suffused with brown; the cilia white, with a brown line through them; underside with discoidal point, the costal area irrorated with brown.

Hab. U.S.A., Colorado, Nevada 1 ♂ Grote Coll., California, Havilah, 1 ♀ Grote Coll., (*Walsingham*) 2 ♂, 5 ♀, Arizona. *Exp.* 32–38 millim.

358. **Euxoa collocata.** (Plate LXII. fig. 3.)

Carneades collocata, Smith, Trans. Am. Ent. Soc. xxi. p. 50, pl. iii. f. 5 (1893).

♀. Head, thorax, and abdomen reddish brown mixed with black; tegulæ greyer in front and with dark medial line. Fore wing reddish brown suffused with dark brown, with a slight purplish tinge and strongly irrorated with black; the costal area hardly paler; the subbasal and antemedial lines obsolete; a black streak below the cell from base to the claviform, which is outlined with black; the cell black, defining the stigmata, the orbicular being produced and confluent with the reniform; the postmedial line very indistinct, oblique from costa to vein 6, excurved to vein 3, then inwardly oblique; veins 2, 3, 4, 6, 7 defined by pale streaks, the 1st above only, the two last only towards termen; a subterminal series of dentate black marks; a terminal series of black points. Hind wing semihyaline, white, the veins and terminal area irrorated with brown.

Hab. U.S.A., Colorado, 1 ♀, Glenwood Springs. *Exp.* 38 millim.

359. **Euxoa nevada.** (Plate LXII. fig. 4.)

Carneades nevada, Smith, Pr. U.S. Nat. Mus. xxii. p. 420 (1900).

♂. Head and thorax brown mixed with grey and black; abdomen grey, dorsally tinged with brown, ventrally irrorated with black. Fore wing grey-brown irrorated with black; a diffused black streak below base of cell, with an oblique pale striga on it representing the subbasal line; claviform elongate, defined by black; orbicular and reniform small, with brownish centres and whitish annuli defined by black, the former elliptical and connected by a whitish streak below subcostal nervure with the latter, the cell suffused with black before and between the stigmata; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; a wedge-shaped patch of blackish suffusion from reniform to termen; the subterminal line represented by a very indistinct series of grey points with obscure dentate blackish marks on their inner side; some pale points on costa towards apex; a terminal series of black points. Hind wing white, with slight fuscous irroration on terminal

area and a terminal fuscous line; the underside with the costal area irrorated with fuscous.

Hab. U.S.A., Nevada, cotype† in Coll. J. B. Smith, California (*Walsingham*), 1 ♂. *Exp.* 36 millim.

360. Euxoa acuminifera.

Hadena acuminifera, Ev. Bull. Mosc. 1854, p. 188; id. 1856, p. 34; Herr.-Schäff. Neue Schmett. ff. 17, 18; Staud. Cat. Lep. pal. p. 147.

♂. Head and thorax olive-brown mixed with fuscous and white; palpi blackish, white at tips; frons white below; tegulæ with blackish medial line; tarsi banded with black; abdomen white. Fore wing pale reddish brown irrorated with black; the costal area whitish to the postmedial line, nearly pure white at base; a black streak below base of cell; median nervure streaked with white; antemedial line whitish, slightly defined by black, angled outwards below costa and in submedian fold; claviform small, defined by black and with a pale streak from it to subterminal line; orbicular and reniform with pale brown centres irrorated with a few black scales and narrow white annuli defined by black, the former oblique, elliptical; the postmedial line hardly dentate, slightly defined by pale colour on outer side, bent outwards below costa, excurved to vein 5, then incurved; subterminal line indistinct, pale, defined by small dentate black marks on inner side; the veins of terminal area streaked with black and veins 7, 4, 3 slightly defined by white streaks near subterminal line; a terminal series of small black lunules; cilia pale brown, whitish at base and with fuscous medial line. Hind wing white, the termen very slightly tinged with brown and with fine brown terminal line; the underside with the costal area irrorated with brown, a small discoidal spot, and postmedial series of short streaks on the veins.

Hab. Russia, Astrachan, Bogdo, 1 ♂; W. Turkestan, Khirghis, Turcomania. *Exp.* 38 millim.

361. Euxoa submolesta. (Plate LXII. fig. 5.)

Agrotis submolesta, Püng. Iris, xii. p. 291, pl. 8. f. 14 (1900); Staud. Cat. Lep. pal. p. 148.

Head and thorax grey mixed with brown; tegulæ with prominent black medial line; abdomen pale brown. Fore wing pale grey-brown; a double waved subbasal line from costa to submedian fold; a double waved antemedial line with some fuscous-grey suffusion before it on costal area; claviform moderate, prominently defined by black; orbicular and reniform defined by black, the former round, a brown streak in discal fold between the stigmata and from reniform to postmedial line, which is dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line represented by a series of pale dentate marks, angled outwards at vein 7 and excurved at middle, with more or less prominent dentate dark marks before them at middle and some brown suffusion beyond them below

apex; a terminal lunulate line. Hind wing fuscous brown; the cilia grey, with a brownish line through them; the underside whitish, the costal and terminal areas irrorated with brown, a dark discoidal point and crenulate curved postmedial line.

Hab. Tibet, Kuku Nor, Sinin Mts., 1 ♂, 1 ♀. *Exp.* 42–44 millim. Type † in Coll. Püngeler.

*362. Euxoa flaviscapula. (Plate LXII. fig. 6.)

Carneades flaviscapula, Smith, Pr. U.S. Nat. Mus. xxii. p. 422 (1900).

♂. Dull fuscous brown, with fine grey irroration; tegulæ reddish at base and with black medial line, the tips grey. Fore wing evenly irrorated, the markings indistinct, but all traceable; subbasal line double, curved from costa to submedian fold; antemedial line somewhat waved and slightly angled outwards at median nervure; claviform defined by a few fuscous scales; orbicular subquadrate, with fine greyish annulus defined by a few black scales; reniform moderate, defined by grey and black scales, its outer side suffused with ochreous at middle; postmedial line minutely waved, bent outwards below costa, excurved to vein 4, then incurved, some pale points on costa beyond it; subterminal line ochreous, angled outwards at vein 7 and excurved at middle. Hind wing ochreous white, the terminal area slightly tinged with brown.

Hab. U.S.A., New Mexico. *Exp.* 32 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*363. Euxoa candida. (Plate LXII. fig. 7.)

Carneades candida, Smith, Trans. Am. Ent. Soc. xxi. p. 49, pl. iii. f. 4 (1894).

Mouse-grey over a luteous ground-colour; head with the lower part of frons pale or luteous; tegulæ mottled grey and luteous with blackish medial line and luteous tips; thorax and patagia grey; abdomen white tinged with yellowish. Fore wing rather mottled; the lines indistinct, interrupted; the basal area more luteous, the medial area greyer with luteous streaks in discal and submedian folds, the postmedial area luteous irrorated with fuscous, the terminal area grey; subbasal line double, blackish; the antemedial line double, with blackish spots on costa, erect and somewhat excurved in interspaces; claviform moderate, luteous defined by black; orbicular and reniform luteous, indistinctly defined by black, the former round; postmedial line double, with black spots at costa, the inner line lunulate, the outer even, bent outwards below costa, excurved to vein 4, then oblique; subterminal line indistinct, irregular; a terminal series of black lunules; a yellowish line at base of cilia. Hind wing pure white, the veins yellowish.

Hab. U.S.A., Montana, Boulder (*Ulke*). *Exp.* 33 millim. This species is unknown to me; figured from Prof. Smith's plate.

*364. Euxoa procellaris. (Plate LXIV. fig. 1.)

Agrotis procellaris, Meyr. Ent. Mo. Mag. xxxvi. p. 258 (1900).

Head, thorax, and abdomen red-brown mixed with grey; tegulæ with black medial line; tarsi blackish ringed with white. Fore wing grey, tinged with red-brown and irrorated with black-brown; subbasal line double, waved, from costa to submedian fold; antemedial line double, angled inwards on median nervure and vein 1, excurved below costa and cell, strongly above inner margin; claviform moderate, distinctly defined by black; orbicular and reniform moderate with brownish centres defined by black and connected by a blackish streak above median nervure, the former round; postmedial line defined by grey on outer side, dentate, bent outwards below costa, excurved to vein 4, then incurved and angled outwards on vein 1; subterminal line grey, defined by a slight dark shade on inner side, angled outwards at vein 7 and slightly excurved at middle; a terminal series of black points. Hind wing ochreous suffused with brown, paler towards base and inner margin, more uniformly suffused in female; the underside whitish, the costal area irrorated with brown.

Hab. Hawaii, Laysan I., type † ♂ ♀ in Mus. Bremen. *Exp.* 44 millim.

365. Euxoa sponsa. (Plate LXII. fig. 8.)

Agrotis sponsa, Smith, Pr. U.S. Nat. Mus. x. p. 457 (1887); id. Cat. Noct. N. Am. p. 90.

♀. Head and thorax fuscous brown mixed with grey; tegulæ with black medial line; tarsi with pale rings; abdomen grey mixed with fuscous brown. Fore wing fuscous brown irrorated with grey and black; the subbasal line represented by double black striæ from costa and median nervure, the latter oblique; the antemedial line oblique, waved, defined by greyish on inner side; claviform minute, obscurely defined by black; orbicular and reniform defined by black and with slight dark centres, the former round; a slight oblique waved medial line from cell to inner margin; the postmedial line minutely dentate, slightly bent outwards below costa, excurved to vein 4, then oblique; the subterminal line indistinct, greyish, minutely dentate and slightly angled outwards at vein 7 and excurved at middle, slightly defined by black on inner side, the area beyond it suffused with fuscous; a terminal series of black points. Hind wing fuscous, paler towards base and inner margin; the cilia whitish with fuscous line at base; the underside with the costal area irrorated with black, a slight discoidal lunule and curved postmedial line.

Hab. U.S.A., Washington, Pullman, 1 ♀. *Exp.* 38 millim.

*366. Euxoa loya. (Plate LXII. fig. 9.)

Carneades loya, Smith, Pr. U.S. Nat. Mus. xxii. p. 422 (1900).

♀. Dark mouse-grey; tegulæ with a broad dark band. Fore wing with the lines almost obsolete, indicated by a few dark scales;

claviform obsolete; orbicular moderate, rounded, with ochreous annulus; reniform narrow, with blackish centre and ochreous annulus; subterminal line represented by a series of irregular ochreous points preceded and followed by dusky shading. Hind wing ochreous, fuscous at base, blackish towards margins, the veins and a discoidal lunule blackish; cilia ochreous at base, fuscous at middle, and whitish at tips; the underside fuscous with darker irroration, a discoidal spot and somewhat incomplete postmedial line.

Hab. U.S.A., California, High Sierras (*Dyar*). *Exp.* 36 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

367. **Euxoa bicollaris.** (Plate LXII. fig. 10.)

Agrotis bicollaris, Grote, Bull. Geol. Surv. iv. p. 173 (1878); id. Proc. Am. Phil. Soc. xxi. p. 155; Smith, Cat. Noct. N. Am. p. 90.

Pale grey-brown with an ochreous tinge and irrorated with brown; palpi blackish at sides except at extremity; tegulæ with the basal half mostly black. Fore wing with traces of brown antemedial line angled on median nervure, and with striæ from costa before and beyond it; orbicular and reniform large, very indistinct, with dark outline, the former rounded, the latter with darker centre; the postmedial line double, very indistinct, bent outwards below costa, then represented by series of points on the veins; the subterminal line indistinct, double, angled outwards below costa and slightly at vein 4, the area beyond it with darker irroration; a terminal series of small triangular spots. Hind wing brown, the veins and small discoidal lunule rather darker; cilia pale, with a brown line through them; underside with the costal area strongly irrorated with brown.

Hab. U.S.A., Nevada, California, Havilah, 1 ♂ 1 ♀ type, Grote Coll., Arizona. *Exp.*, ♂ 34, ♀ 38 millim.

368. **Euxoa excogita.** (Plate LXII. fig. 11.)

Carneades excogita, Smith, Pr. U.S. Nat. Mus. xxii. p. 423 (1900).

♀. Head and thorax pale grey-brown; palpi blackish at sides, except at tips; tegulæ with medial black band; abdomen brownish grey. Fore wing grey, suffused with rufous and slightly irrorated with black; the subbasal line represented by a slight black striga from costa and point below cell; the antemedial line indistinct, dark, waved; claviform and orbicular obsolete; reniform an indistinct dark lunule; postmedial line indistinct, dentate, slightly bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line indistinct, greyish, waved, slightly angled outwards at vein 7 and excurved at middle. Hind wing brownish grey, the cilia white except at base; the underside whitish, the costal and terminal areas irrorated with brown, a slight discoidal point and curved postmedial line.

Hab. U.S.A., Colorado, Glenwood Springs (*Barnes*), 1 ♀. *Exp.* 34 millim.

369. Euxoa punctigera. (Plate LXII. fig. 12.)

Mamestra punctigera, Wlk. xxxii. 661 (1865); Smith, Cat. Noct. N. Am. p. 92.
Agrotis pastoralis, Grote, Can. Ent. vii. p. 68 (1875).

Head and thorax black-brown; a few of the scales tipped with white; abdomen dark brown mixed with grey. Fore wing black-brown irrorated with grey; the orbicular and reniform with black outlines, with some grey scales on inner side, the former rather small, round, the latter well developed; hardly a trace of the antemedial line; the postmedial line very indistinct, oblique from costa to vein 5, then inwardly oblique and waved; the subterminal line represented by indistinct black streaks in the interspaces. Hind wing brown; the veins darker; cilia white at tips. Underside of both wings with the costal and terminal areas irrorated with white; hind wing with the discal area whitish; a small discoidal spot and curved postmedial line obsolete towards inner margin.

Hab. Canada, Br. Columbia, Vancouver I., 2 ♂ type, 1 ♀ Grote Coll., type *pastoralis*; U.S.A., N. York 1 ♀, Washington 2 ♀, Colorado 1 ♀, Nevada, New Mexico, Arizona. *Exp.*, ♂ 44, ♀ 48 millim.

370. Euxoa perpolita. (Plate LXII. fig. 13.)

Agrotis perpolita, Morr. Proc. Bost. Soc. Nat. Hist. xviii. p. 237 (1876); Smith, Cat. Noct. N. Am. p. 91.

♀. Dark fuscous brown; tibia and tarsi with whitish points at extremities of joints; pectus and abdomen irrorated with grey. Fore wing with double, waved, black subbasal line from costa to submedian fold; a trisinuate double antemedial line; the orbicular and reniform black-edged, the former elliptical and touching the antemedial line, the latter well developed; the postmedial line curved, dentate; an indistinct subterminal series of small dentate marks with some grey scales on them. Hind wing with the basal half whitish; an indistinct curved postmedial line, more prominent on underside; cilia whitish.

Hab. U.S.A., N., E. & Middle States, Maine, Massachusetts (*J. E. Bates*), 2 ♀, New York, Colorado. *Exp.* 40 millim.

*371. Euxoa finis. (Plate LXII. fig. 14.)

Agrotis finis, Smith, Pr. U.S. Nat. Mus. x. p. 457 (1887); id. Cat. Noct. N. Am. p. 92.

Dull brownish fuscous; tegulæ with brown medial line; patagia with some rufous at base and extremities. Fore wing tinged with rusty-brown on subbasal and postmedial areas; lines double, more or less distinct; subbasal line waved, interrupted in cell; antemedial line oblique, excurved in interspaces, more strongly above inner margin; claviform rather small, defined by black; orbicular round, reddish grey with dark irroration; reniform with fine yellow annulus, the yellow rather encroaching on outer side of centre: postmedial line minutely waved, bent outwards below costa, excurved

to vein 4, then incurved; subterminal line pale, slender, slightly and irregularly sinuous. Hind wing dull yellowish fuscous, paler towards base; the veins and a discoidal lunule darker; the underside paler, with dark irroration especially towards apex; a dark discoidal spot and postmedial line.

Hab. U.S.A., Montana, Black Hills. *Exp.* 34 millim. This species is unknown to me, figured from a photograph from type in U.S. Nat. Mus.

372. Euxoa perfusca. (Plate LXII. fig. 15.)

Agrotis perfusca, Grote, Papilio, iii. p. 77 (1883); Smith, Cat. Noct. N. Am. p. 91.

♂. Head and thorax deep purple-brown, some of the scales tipped with grey; the edges of tegulæ and patagia rufous; abdomen grey mixed with dark brown, the anal tuft rufous. Fore wing dark fuscous brown; the subbasal, antemedial, and postmedial lines hardly traceable; the claviform with its extremity defined by black; the orbicular and reniform defined by black, the former large, oblique, elliptical, open above and below, the latter large, open above and below; the subterminal line represented by a series of whitish points. Hind wing white suffused with brown, especially the veins and terminal area; cilia white, with brown line at base; the underside with indistinct curved postmedial line.

♀. Hind wing more suffused with brown.

Hab. U.S.A., Washington, Pullman, 1 ♂, Oregon, 1 ♀, Colorado, Denver, California, Arizona. *Exp.* 36 millim.

373. Euxoa fumalis. (Plate LXII. fig. 16.)

Agrotis fumalis, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 98 (1873); Smith, Cat. Noct. N. Am. p. 91.
Agrotis permunda, Morr. Proc. Bost. Soc. N. H. xvii. p. 163 (1874).

Dull brown or dark grey-brown; head and thorax with the hair grey-tipped. Fore wing with indistinct double, waved, black subbasal line from costa to submedian fold; a double quadrisinuate antemedial line; the orbicular represented by a dark point or obsolete, the reniform an indistinct lunule; the postmedial line strongly dentate, bent outwards below costa, excurved to vein 3, then oblique; faint traces of an irregularly waved subterminal line; a terminal series of small lunules. Hind wing dark brown, the cilia paler. Underside of both wings with discoidal spot and curved postmedial line.

Hab. Canada; U.S.A., N., E. & Middle States, New York, 1 ♂, 1 ♀, Windsor, 1 ♂, Grote Coll. *Exp.* 40 millim.

374. Euxoa velleripennis. (Plate LXII. fig. 17.)

Agrotis velleripennis, Grote, Rep. Peab. Acad. Sci. vi. App. p. 25 (1874); Smith, Cat. Noct. N. Am. p. 92.

♂. Dark fuscous brown with a greyish tinge; pectus, legs, and

abdomen browner and irrorated with grey. Fore wing with indistinct double, waved, black subbasal line from costa to submedian fold; an indistinct waved black antemedial line with the small indistinct claviform on its outer side; the orbicular and reniform large and defined by black lines, the former round and often conjoined to the antemedial line, the latter often with grey patch on its outer side; the postmedial line indistinct, bent outwards below costa, excurved to vein 3, then bent inwards and oblique, often reduced to points on the veins; a subterminal sinuous series of black and grey points on the veins; a terminal series of black points. Hind wing white, the veins, costal area, and termen tinged with fuscous brown; a postmedial series of minute streaks on the veins often present; cilia brown, with fine pale line at base and white tips.

♀. Hind wing fuscous brown, the cell and area near it indistinctly whitish.

Hab. Canada; U.S.A., E. & Middle States, New York, 3 ♂, 1 ♀ type, Grote Coll. *Exp.* 36–38 millim.

375. Euxoa atomaris. (Plate LXII. fig. 18.)

Agrotis atomaris, Smith, Trans. Am. Ent. Soc. xvii. p. 47 (1890); id. Cat. Noct. N. Am. p. 92.

♂. Head and thorax fuscous black, with a few ochreous and grey scales, especially on edges of tegulæ, patagia, and in dorsal crest; pectus and legs largely mixed with white; abdomen white irrorated with brown, and tinged with ochreous on dorsum. Fore wing ochreous, almost entirely suffused with fuscous black; the subbasal line represented by two points on costa; the antemedial line very indistinct, waved; claviform elongate, finely outlined with black; orbicular and reniform indistinct, obscurely outlined with black; the postmedial line indistinct, minutely dentate, bent outwards below costa, excurved to vein 3, then oblique; the subterminal line represented by points of whitish scales; a terminal series of black points. Hind wing semihyaline white; the veins towards termen, apical part of termen, and a fine terminal line brown.

Hab. U.S.A., Colorado (*Hulst*), 1 ♂, California. *Exp.* 26 millim.

376. Euxoa adumbrata.

Agrotis adumbrata, Ev. Bull. Mosc. iii. p. 543 (1842); Herr.-Schäff. Schmett. Eur., Noct. f. 121; Staud. Cat. Lep. pal. p. 149.

Agrotis obscura, Staud. Stett. ent. Zeit. 1874, p. 94; id. Rom. Mém. ii. pl. 2. f. 6.

Agrotis polygonides, Staud. Stett. ent. Zeit. 1874, p. 94; id. Rom. Mém. ii. p. 30, pl. 2. f. 5.

Head and thorax fuscous brown mixed with grey; abdomen grey, tinged with ochreous and irrorated with brown. Fore wing greyish, completely suffused with fuscous brown or with the medial and terminal areas darker; an indistinct, pale, waved, subbasal line from costa to submedian fold; an oblique, dark, waved, antemedial line

defined by grey on inner side; claviform with its extremity slightly defined by blackish; orbicular and reniform with whitish annuli defined by black, the former oblique, elliptical; the postmedial line indistinct, defined by greyish on outer side, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line indistinct, whitish, defined by slight dentate dark marks on inner side, angled outwards at vein 7, excurved and dentate at middle; a terminal series of black points; cilia with fine pale line at base. Hind wing whitish, the veins and marginal areas broadly suffused with brown; cilia white, with brown line at base; the underside with the costal and terminal areas irrorated with brown, a brown discoidal spot.

Ab. 1. *polygonides*. Fore wing browner and more variegated with grey.

Hab. Russia, Urals, Kurusch (*Christoph*), 2 ♂, 1 ♀; Armenia, Caucasus; W. Turkestan, Turcomania, 1 ♂, Ferghana, Tarbagatai Mts., Issyk-kul; E. Turkestan, Ili; Tibet, Amdo; E. Siberia, Ussuri. *Exp.* 38–42 millim.

377. Euxoa atrofusca. (Plate LXII. fig. 19.)

Carneades atrofusca, Smith, Pr. U.S. Nat. Mus. xxii. p. 447 (1900).

♂. Head and thorax fuscous brown, mixed with reddish brown and some grey, tegulæ more rufous; tarsi blackish, with pale rings; abdomen grey-brown. Fore wing grey-brown, thickly irrorated with black and suffused with blackish towards termen; a double waved subbasal black line from costa to submedian fold; an oblique, double, waved antemedial line; claviform minute, defined by a few black scales; orbicular and reniform with greyish annuli defined by black, the former oblique, elliptical; the postmedial line indistinct, dentate, bent outwards below costa, slightly incurved at discal fold and incurved below vein 4; some pale points on costa towards apex; the subterminal line greyish, minutely waved, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing whitish, the veins and marginal areas suffused with brown; cilia white, with brown line at base; the underside white, the costal and terminal areas irrorated with brown, a dark discoidal spot and slight curved postmedial line.

The colour varies from mouse-grey to reddish brown.

Hab. U.S.A., Washington, Pullman, 1 ♂, Colorado, Glenwood Springs. *Exp.* 36 millim.

378. Euxoa stigmatilis. (Plate LXII. fig. 20.)

Carneades texana, Smith, Bull. U.S. Nat. Mus. 38, p. 154 (1890); *nec* Grote.

Carneades stigmatilis, Smith, Pr. U.S. Nat. Mus. xxii. p. 425 (1900).

♀. Head and thorax red-brown mixed with dark brown; abdomen greyish mixed with ochreous brown. Fore wing brown, irrorated with black-brown; claviform indicated by a dark shade; orbicular and reniform with black outlines, inside which are a few

grey scales, the former rather small, round, the latter large; no trace of antemedial line; the postmedial line indistinct, minutely waved, oblique from costa to vein 5, then inwardly oblique; the subterminal line indistinct, waved, greyish; a fine pale line at base of cilia. Hind wing white; the veins brown; the terminal area tinged with brown.

Hab. U.S.A., Colorado, Glenwood Springs (*Barnes*), in Coll. J. B. Smith, Arizona, Tuczon, 1 ♀, Grote Coll. *Exp.* 42–48 millim.

379. Euxoa gagates. (Plate LXII. fig. 21.)

Agrotis gagates, Grote, Can. Ent. vii. p. 69 (1875); Smith, Cat. Noct. N. Am. p. 92.

♂. Head and thorax red-brown, some of the scales tipped with white; abdomen grey mixed with yellow-brown. Fore wing red-brown; the veins fuscous brown; orbicular and reniform outlined with white, the former small, round, the latter well developed, open above and below; no trace of antemedial line; the postmedial line indistinct, bent outwards below costa, excurved to vein 4, then incurved; an indistinct waved grey subterminal line excurved between veins 7 and 5; a terminal series of black points; a fine pale line at base of cilia. Hind wing white, the veins and termen tinged with brown.

♀. Hind wing with the veins brown, the terminal area suffused with brown.

Hab. Canada (*Norman*), 1 ♀; U.S.A., Massachusetts, Abington (*Col. Bates*), 1 ♂, Colorado, 1 ♀ type, Grote Coll., California. *Exp.*, ♂ 40, ♀ 44 millim.

*380. Euxoa dianthœciæ.

Agrotis dianthœciæ, Mab. Bull. Soc. Philom. (7) ix. p. 60 (1885); id. N. Arch. Mus. (3) i. p. 147, pl. x. f. 8.

♂. Head and thorax grey-brown mixed with yellow-brown and white; abdomen pale yellow-brown. Fore wing yellow-brown, mixed with grey and irrorated with fuscous; an indistinct waved subbasal line from costa to submedian fold; the antemedial line angled inwards in cell and outwards in submedian fold and on vein 1; the orbicular and reniform small, whitish, the former round, with a dark point on costa above it; traces of an irregular medial line; postmedial line strongly dentate, bent outwards below costa, excurved to vein 4, then oblique, slightly angled inwards in discal fold, more strongly at submedian fold; subterminal line defined by slight fuscous suffusion before it, angled outwards at vein 7 and excurved at middle; a slight terminal series of points. Hind wing brown, the cilia white with a brown line at base; the underside white irrorated with brown, a brown discoidal spot and curved postmedial line.

Hab. Patagonia, Santa Cruz, type † ♂ in Mus. Paris. *Exp.* 34 millim.

381. **Euxoa falclandica**, n. sp. (Plate LXII. fig. 22.)

Head and thorax black-brown mixed with ochreous and grey; pectus with grey hair; tarsi ringed with white; abdomen fuscous brown, with whitish segmental lines, the ventral surface whitish. Fore wing black-brown, mixed with some ochreous and grey; a waved whitish subbasal line from costa to submedian fold; a waved whitish antemedial line defined by black on each side and strongly angled inwards in cell and on vein 1; orbicular and reniform small, whitish, with brown centres, the former round; the postmedial line black, defined by whitish on outer side, dentate, strongly bent outwards below costa, excurved to vein 4, then incurved; a pale subterminal line angled outwards at vein 7 and excurved at middle, with dentate blackish marks on its inner side; a terminal series of black points; cilia ochreous brown. Hind wing fuscous brown; cilia whitish, with a brown line at base; the underside fuscous brown, with slight whitish streaks on the veins; the cilia white.

Hab. Falkland Is., 1 ♂, 1 ♀ (*Vallentin*), 1 ♂, 1 ♀ type. *Exp.* 36 millim.

382. **Euxoa misturata.** (Plate LXII. fig. 23.)

Carneades misturata, Smith, Bull. U.S. Nat. Mus. 38, p. 156 (1890); id. Cat. Noct. N. Am. p. 92.

♀. Head and thorax pale red-brown mixed with black; palpi with the 2nd joint blackish at sides; tarsi banded with black; abdomen white, ventrally tinged with red-brown. Fore wing pale red-brown, thickly irrorated with black; the subbasal line represented by black spots on costa and below cell, with pale striæ on their outer sides; the antemedial line double, waved, strongly angled outwards below costa; orbicular and reniform whitish, defined by black and with their centres irrorated with fuscous, the former oblique, elliptical; an oblique waved medial line from lower angle of cell to inner margin; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line pale, angled outwards at vein 7 and dentate at veins 4 and 3, defined on inner side by a series of dentate blackish marks, the area beyond it rather darker; a terminal series of black points; cilia pale rufous. Hind wing white, the terminal area suffused with very pale brown, forming a well-defined band.

Hab. U.S.A., Colorado, Glenwood Springs (*Barnes*), 1 ♀. *Exp.* 36 millim.

*383. **Euxoa mœrens.** (Plate LXII. fig. 24.)

Carneades mœrens, Grote, Can. Ent. xv. p. 4 (1883); Smith, Cat. Noct. N. Am. p. 93.

♂. Head and thorax red-brown, the hairs with pale tips; tibiæ and tarsi banded with black; abdomen ochreous white with slight fuscous irroration. Fore wing red-brown, slightly irrorated with

black; the subbasal line black, double, waved; the antemedial line double, obliquely waved; claviform slightly outlined with black; orbicular and reniform outlined with black, the former round with fuscous centre, the latter with some fuscous in its lower extremity; a medial shade from cell to inner margin; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 3, then incurved; the subterminal line defined by the area beyond it being tinged with fuscous, angled outwards at vein 6 and excurved at middle; a terminal series of black points. Hind wing yellowish white, suffused with brown especially towards termen, the veins and a waved terminal line brown; the underside with discoidal spot, curved postmedial line, and terminal series of points.

♀. Head, thorax, and fore wing rather greyer; abdomen and hind wing white; fore wing with the postmedial line more dentate.

Hab. U.S.A., Colorado, Glenwood Springs, in Coll. Schaus, New Mexico, Hot Springs, in U.S. Nat. Mus., Arizona. *Exp.* 32 millim.

384. **Euxoa robiginosa.** (Plate LXII. fig. 25.)

Agrotis robiginosa, Staud. Iris, vii. p. 271 (1894); id. Cat. Lep. pal. p. 150.

♀. Head and thorax pale rufous; tarsi banded with black; abdomen ochreous. Fore wing rather paler rufous; the subbasal line represented by traces of double striæ from costa and cell; antemedial line almost obsolete; claviform narrow, slightly defined by brown; orbicular and reniform slightly defined by blackish, the former oblique, elliptical; postmedial line indistinct, dentate, bent outwards below costa, excurved to vein 4, then oblique; subterminal line defined by slight fuscous suffusion on inner side; a terminal series of black points. Hind wing white, the veins and terminal half tinged with ochreous brown; cilia white; underside white, the costal and terminal areas very slightly irrorated with pale brown.

Hab. Syria, Palestine, 1 ♀. *Exp.* 40 millim.

*385. **Euxoa exculta.** (Plate LXII. fig. 26.)

Carneades exculta, Smith, Pr. U.S. Nat. Mus. xxii. p. 424 (1900).

♂. Soft dark red-brown, suffused with grey; tegulæ without transverse line. Fore wing with the lines almost obsolete, the ante- and postmedial lines represented by fuscous spots on costa and the former by a series of golden brown scales; orbicular and reniform slightly darker, very faintly defined by golden-brown scales; subterminal line irregular, only defined by the area beyond it being somewhat darker. Hind wing ochreous tinged with fuscous, darker towards termen; cilia yellowish white; underside whitish, the costal and terminal areas with dark irroration.

Hab. Canada, N.W. Br. Columbia. *Exp.* 33 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

386. Euxoa cursoriodes, n. sp. (Plate LXII. fig. 27.)

♂. Head and thorax brownish white, slightly irrorated with fuscous; palpi fuscous at sides; tegulæ with fuscous medial line; tarsi banded with black; abdomen ochreous white. Fore wing reddish ochreous; a dentate subbasal blackish line from costa to submedian fold, a waved antemedial line produced to a long tooth above inner margin; claviform small, defined by brown; orbicular and reniform with brownish centres and ochreous annuli defined by brown; postmedial line highly dentate, bent outwards below costa, excurved to vein 4 and incurved in submedian fold; the subterminal line indistinct, whitish, dentate, angled outwards at vein 7 and excurved at middle, with slight dentate dark marks on its inner side at middle and brownish suffusion beyond it; a terminal series of black points. Hind wing semihyaline white, the veins and termen tinged with brown; the underside with slight discoidal spot and postmedial series of striæ on the veins and traces of a line towards costa.

Hab. Syria, 1 ♂ type, Leech Coll. *Exp.* 38 millim.

387. Euxoa heringi.

Agrotis heringi, Staud. Stett. ent. Zeit. 1877 (March), p. 181; Christ. Hor. Soc. Ent. Ross. xii. p. 248, pl. 6. f. 21 (1877 June); Staud. Cat. Lep. pal. p. 145.
Agrotis signata, Staud. Iris, xii. p. 364 (1899).

♂. Head and thorax ochreous with a fulvous tinge; palpi tinged with fuscous at sides; abdomen ochreous white. Fore wing ochreous, tinged with fulvous and irrorated with fuscous; a very indistinct waved antemedial line; faint traces of orbicular and reniform stigmata; a very indistinct dentate postmedial line bent outwards below costa, excurved to vein 4, then incurved; traces of a subterminal line slightly angled outwards at vein 7 and excurved at middle, the area beyond it slightly tinged with fuscous. Hind wing ochreous white; the veins brownish; the terminal area suffused with fuscous brown; the underside with the costal and terminal areas irrorated with brown.

Ab. 1. *signata*. Fore wing with the markings more distinct.

Hab. Asia Minor, Pontus, Taurus; Persia, Scharud, 2 ♂, Zeller Coll. *Exp.* 36 millim.

*388. Euxoa serricornis.

Agrotis serricornis, Smith, Pr. U.S. Nat. Mus. x. p. 458 (1887); id. Cat. Noct. N. Am. p. 94.

Reddish ochreous with darker irroration; thorax clothed with hair and scales. Fore wing with the subbasal and antemedial lines double, the latter somewhat oblique and excurved in interspaces; claviform obsolete; orbicular obsolescent, with very faint pale annulus; reniform fuscous, with indistinct pale annulus; postmedial line represented by a double series of points on the veins; subterminal line distinct, pale, irregularly sinuous, defined on inner side by a dark shade, the area beyond it tinged with fuscous.

Hind wing whitish, tinged with fuscous towards termen; the underside pale, irrorated with rufous and grey, an indistinct discoidal point.

Hab. U.S.A., S. California. *Exp.* 33 millim. This species is unknown to me.

*389. Euxoa eremioides. (Plate LXII. fig. 28.)

Agrotis eremioides, Meyr. Ent. Mo. Mag. xxxvi. p. 257 (1900).

♂. Head and thorax dull reddish brown; thorax fuscous brown; abdomen brownish grey, the anal tuft ochreous. Fore wing pale ochreous brown, more or less suffused with fuscous and with a silky gloss; the lines indistinct or obsolete; the antemedial line erect, minutely waved; claviform and orbicular obsolete, or the latter small, elliptical, with dark outline; reniform an obscure fuscous patch or obsolete; postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; subterminal line a slight shade, angled outwards at vein 7 and excurved at middle; a terminal series of points. Hind wing whitish tinged with brown, the veins and a terminal line darker.

Hab. Hawaii, Laysan I., in Coll. Meyrick. *Exp.* 46 millim.

390. Euxoa citricolor. (Plate LXII. fig. 29.)

Agrotis citricolor, Grote, Can. Ent. xii. p. 154 (1880); id. Can. Ent. xv. p. 26; Smith, Cat. Noct. N. Am. p. 92.

♂. Head and thorax lemon-yellow, the base of hair white; pectus, legs, and abdomen white, the last dorsally tinged with ochreous towards extremity. Fore wing lemon-yellow; a short reddish-brown streak at lower angle of cell; some minute brown points on termen; cilia tinged with rufous. Hind wing pure white. Underside white.

Ab. 1. Fore wing with the postmedial line present, curved, waved; a very irregular subterminal line with the area beyond it darker; orbicular dusky, very indistinct; reniform large, dusky, indistinct; the underside with discoidal point and some grey irroration towards apex.

Hab. U.S.A., Colorado, 1 ♂ type, Grote Coll., Utah, Arizona. *Exp.* 40 millim.

391. Euxoa farinosa. (Plate LXII. fig. 30.)

Agrotis farinosa, Staud. Stett. ent. Zeit. 1888, p. 12; id. Cat. Lep. pal. p. 148.

♂. Head and thorax grey-white, tinged with pink and with a few blackish scales; abdomen white. Fore wing pale grey, suffused with pinkish and irrorated with a few blackish scales; the subbasal line represented by double striæ from costa; the antemedial line with double striæ on costa, then single, oblique, excurved in interspaces; claviform and orbicular obsolete; reniform very slightly defined by dark scales; postmedial line indistinct, dentate, bent outwards below costa, excurved to vein 4, then incurved;

the subterminal line represented by a few pale points with some dark scales before them; a terminal series of dark points. Hind wing white, with brownish terminal line.

♀. Head, thorax, and fore wing ochreous grey, with hardly a trace of the pinkish tinge; abdomen tinged with brown; hind wing with the veins, costal and inner areas tinged with brown.

Hab. W. Turkestan, Aksu, 1 ♂, 1 ♀, Issyk Kul; E. Turkestan, Ili. *Exp.* 40 millim.

*392. Euxoa remota. (Plate LXII. fig. 31.)

Agrotis remota, Smith, Trans. Am. Ent. Soc. xvii. p. 47 (1890); id. Cat. Noct. N. Am. p. 93.

Pale carneous grey; palpi blackish at sides. Fore wing with slight reddish suffusion on medial area, the terminal area tinged with fuscous; subbasal line distinct, double, brown; antemedial line double, incomplete, somewhat excurved in interspaces; claviform small, incompletely defined by black; orbicular oblique, irregularly elliptical, grey defined by black; reniform large, grey, with fine pale annulus incompletely defined by black, its outer side with a pale yellowish blotch; postmedial line indistinctly double, the inner line fine, crenulate, the outer reduced to points on the veins, distinct below vein 5, bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct, irregular, angled outwards at vein 7 and excurved at middle, defined on outer side by the dark terminal area. Hind wing dirty whitish, with the termen darker; the underside pale with darker irroration, a diffused discoidal spot and incomplete postmedial line.

Hab. U.S.A., California, Sierra Nevada (*McGlashan*). *Exp.* 35 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus. and coloured figure from specimen in American Museum of Natural History.

*393. Euxoa infracta.

Agrotis infracta, Morr. Proc. Bost. Soc. Nat. Hist. xviii. p. 115 (1875); Smith, Cat. Noct. N. Am. p. 94.

Yellowish tinged with fuscous. Fore wing with the medial and terminal areas darker; the lines distinct, double; the antemedial line erect, slightly excurved in interspaces; claviform small, defined by black; orbicular and reniform pale defined by black, the former large, round, the latter strongly incurved on outer side at middle; postmedial line strongly bent outwards below costa, excurved to vein 4, then incurved; a dark shade from apex to inner margin before the subterminal line, which is pale, slender, strongly sinuous, and unusually irregular. Hind wing uniform pale yellowish fuscous; the underside with dark irroration, discoidal spot, and postmedial line.

Hab. U.S.A., Texas, Colorado. *Exp.* 28 millim. This species is unknown to me.

394. Euxoa detersa. (Plate LXII. fig. 32.)

Charæas detersa, Wlk. ix. 212 (1856); Smith, Cat. Noct. N. Am. p. 94.
Agrotis pityehrous, Grote, Bull. Buff. Soc. i p. 82 (1873).
Agrotis personata, Morr. Proc. Bost. Soc. N. H. xviii. p. 238 (1876).

♂. Grey-white; the vertex of head, hinder part of tegulæ, and thorax tinged with rufous; abdomen ochreous white. Fore wing suffused with rufous, especially in, below, and beyond cell and on terminal area; the median nervure and veins 3, 4 streaked with white; waved white subbasal and antemedial lines from costa to vein 1 defined by dark lines; claviform small, whitish with dark outline; orbicular and reniform yellowish white with brown outline, the former small, round or slightly elongate, the latter well developed; the postmedial line dentate, bent outwards below costa, then obliquely curved, and with a whitish band between it and the dentate subterminal line, which is angled outwards at veins 7 and 4; a terminal series of small black lunules. Hind wing white, the veins and terminal area brown; cilia white.

♀. Markings grey-brown; hind wing more suffused with brown.

Hab. Canada, Nova Scotia (*Redman*), 3 ♂, 1 ♀ type; U.S.A., N., E. & Central States, 4 ♂, 1 ♀, Grote and Zeller Colls., Colorado (*Bruce*), 1 ♂. *Exp.* 34 millim.

Larva. Beutenmüller, Ent. Amer. v. p. 38 (1889).

Head pale brown, shining. Body brownish, thin-skinned. Dorsal, subdorsal, lateral, and substigmatal lines white; cervical shield pale; spiracles black. Food-plants, grasses.—H. G. D.

*395. Euxoa luteola. (Plate LXIII. fig. 1.)

Agrotis luteola, Smith, Pr. U.S. Nat. Mus. x. p. 457 (1887); id. Cat. Noct. N. Am. p. 94.

♀. Head and thorax grey tinged with pale reddish brown; tegulæ with fuscous medial line; abdomen grey, dorsally tinged with ochreous and irrorated with fuscous. Fore wing pale grey-brown with a slight rufous and ochreous tinge, rather thickly irrorated with fuscous; a double waved subbasal line from costa to submedian fold; a double waved antemedial line angled inwards on vein 1; claviform indicated by a few black scales; orbicular and reniform defined by fuscous, the former round, the latter angled inwards on median nervure, on which there is a fuscous streak at extremity; an oblique shade from lower angle of cell to inner margin; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line defined by some dark scales on each side of it and by the area beyond it being slightly darker, angled outwards at vein 7 and excurved at middle; a terminal series of dark points. Hind wing pale ochreous brown, rather darker towards termen; cilia yellowish white, with slight brown line through them; the underside whiter, the costal area irrorated with brown, a slight discoidal spot and curved postmedial line.

Hab. U.S.A., Arizona, in U.S. Nat. Mus. *Exp.* 30 millim.

*396. Euxoa tetrica.

Agrotis tetrica, Smith, Pr. U.S. Nat. Mus. x. p. 458 (1887); id. Cat. Noct. N. Am. p. 94.

Reddish luteous suffused with grey; thorax clothed with hair and scales. Fore wing with the lines double, indistinct; the antemedial line erect, very even; claviform obsolete; orbicular large, round, defined by black scales; reniform rather large, ill-defined, its lower part suffused with fuscous; postmedial line very even, bent outwards below costa, excurved to vein 4, then incurved; subterminal line very indistinct, sinuous, somewhat pale. Hind wing fuscous, paler towards base; the underside pale, with dark irroration and discoidal lunule.

Hab. U.S.A., Texas, Nevada. *Exp.* 35–37 millim. This species is unknown to me.

*397. Euxoa fulda. (Plate LXIII. fig. 2.)

Carneades fulda, Smith, Pr. U.S. Nat. Mus. xxii. p. 437 (1900).

♀. Head and thorax grey, brownish, and fuscous mixed; tegulæ with traces of medial line; tarsi with black bands; abdomen ochreous white. Fore wing grey, slightly tinged and irrorated with fuscous; a slight double, waved, subbasal line from costa to submedian fold; an indistinct, double, waved antemedial line; claviform represented by a black point at its extremity; orbicular and reniform slightly defined by black, the former round; postmedial line indistinct, minutely waved, double, bent outwards below costa, excurved to vein 4, then oblique; some pale points on costa towards apex; the subterminal line whitish, defined by a slight fuscous patch at costa and striæ at middle and by the area beyond it being darker, angled outwards at vein 7 and excurved at middle; a terminal series of black points; a fine whitish line at base of cilia. Hind wing white, the veins and terminal area tinged with fuscous; cilia white, with a brownish line through them; the underside with the costal and terminal areas slightly irrorated with brown, a minute discoidal point.

Hab. U.S.A., California, Fresno, in U.S. Nat. Mus. *Exp.* 36 millim.

398. Euxoa nævula. (Plate LXIII. fig. 3.)

Carneades nævulus, Smith, Pr. U.S. Nat. Mus. xxii. p. 424 (1900).

♂. Head and thorax brown mixed with grey; abdomen grey tinged with brown. Fore wing grey-brown slightly irrorated with fuscous; the subbasal line represented by blackish marks below costa and cell; the antemedial line rather indistinct, double, waved, angled inwards on vein 1; claviform minute, defined by black; orbicular and reniform well developed and prominently defined by black, the former nearly round; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; faint traces of a minutely waved subterminal line; a terminal series of black points. Hind wing white, with slight

diffused brownish subterminal band and terminal series of dark striæ; the underside with the costal area irrorated with brown, a small blackish discoidal spot.

Hab. U.S.A., California, Placer Co., 1 ♂. *Exp.* 36 millim.

*399. Euxoa termessa. (Plate LXIII. fig. 4.)

Carneades termessus, Smith, Pr. U.S. Nat. Mus. xxii. p. 426 (1900).

♂. Luteous grey, irrorated with fine black scales; palpi rusty yellowish in front. Fore wing with the markings indistinct and slightly darker than ground-colour; subbasal line double and marked at costa only; antemedial line double, the two parts rather widely separated, excurved in cell and above inner margin and slightly in submedian interspace; claviform small; orbicular moderate, elliptical, somewhat paler than ground-colour and defined by fuscous scales; reniform large, extending to below cell and incompletely defined; postmedial line double, the inner line most prominent and somewhat diffused, bent outwards below costa, excurved to vein 4, then incurved; subterminal line almost obsolete except at costa, where it is defined by a dark shade on its inner side; a terminal series of minute black lunules. Hind wing dirty whitish, the terminal area narrowly tinged with fuscous; a discoidal spot and distinct terminal line; the underside white, irrorated with fuscous.

Hab. U.S.A., Wyoming, Yellowstone Park (*Barnes*). *Exp.* 38 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

400. Euxoa detesta. (Plate LXIII. fig. 5.)

Carneades choris, Smith, Bull. U.S. Nat. Mus. 38, p. 158 (1890), *nec* Harv.
Carneades detesta, Smith, Bull. U.S. Nat. Mus. 44, p. 93 (1893); id. Cat. Noct. N. Am. p. 93.

♀. Head and thorax ochreous grey mixed with fuscous black; tegulæ with blackish medial line; tarsi banded with black; abdomen grey-white. Fore wing grey-white with an ochreous tinge and thickly irrorated with fuscous; the subbasal line represented by two black points on costa; the antemedial line oblique, waved, with black point before it on costa; claviform small, slightly defined by black; orbicular and reniform small, defined by black and with fuscous centres; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique; some pale points on costa towards apex; the terminal area clouded with fuscous; the subterminal line represented by a series of small whitish and black dentate marks, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing white, the veins, inner margin, and termen tinged with brown, a fine terminal dark line; the underside white, the costal area slightly irrorated with fuscous.

Hab. U.S.A., Washington, Pullman, 1 ♀, Colorado. *Exp.* 36 millim.

401. Euxoa homicida. (Plate LXIII. fig. 6.)

Agrotis homicida, Staud. Iris, xii. p. 363, pl. 6. f. 7 (1900); id. Cat. Lep. pal. p. 149.

Head and thorax grey mixed with black-brown; abdomen grey. Fore wing grey tinged with brown and strongly irrorated with black; the subbasal line represented by some black scales below cell; the antemedial line oblique, waved; claviform very faintly defined by black at extremity; orbicular and reniform obscurely defined by blackish, the former round; postmedial line minutely dentate, defined by greyish on outer side, bent outwards below costa, excurved to vein 4, then oblique; subterminal line only defined by slight fuscous suffusion on inner side, angled outwards at vein 7 and excurved at middle. Hind wing white, the veins and terminal area suffused with brown, broadly in female; the underside with the costal and terminal areas irrorated with brown.

Hab. Asia Minor, Pontus, Taurus, 1 ♂, 1 ♀. *Exp.* 34 millim.

402. Euxoa contagionis. (Plate LXIII. fig. 7.)

Carneades contagionis, Smith, Pr. U.S. Nat. Mus. xxii. p. 421 (1900).

♂. White; head and thorax slightly mixed with fuscous; palpi blackish at sides; tibiæ and tarsi blackish above with white rings. Fore wing irrorated with fuscous; the subbasal line represented by black points on costa and below cell; the antemedial line almost obsolete, waved, with a black point at costa; the orbicular a small blackish spot, the reniform a small lunule; the postmedial line very indistinct, punctiform, with a prominent black spot at costa, bent outwards below costa, excurved to vein 4, then oblique; faint traces of a dark sinuous subterminal line; a terminal series of black points. Hind wing with very slight brown tinge on veins and termen.

Hab. U.S.A., Washington, Pullman, 1 ♂, Colorado. *Exp.* 36 millim.

*403. Euxoa tronella. (Plate LXIII. fig. 8.)

Carneades tronellus, Smith, ined.

♂. Head and thorax white, very slightly tinged with ochreous-brown and irrorated with dark brown; abdomen white. Fore wing sparsely irrorated with brown; the subbasal, antemedial, and postmedial lines almost obsolete; the orbicular and reniform represented by slight fuscous centres; the subterminal line defined by the area beyond it being slightly browner and by a browner patch before it at costa, slightly angled outwards at vein 7 and excurved at middle; a terminal series of slight dark points. Hind wing white, the veins and medial part of termen very slightly irrorated with brown.

♀. Head, thorax, and fore wing more thickly irrorated with brown, the last with the markings more distinct; a waved ante-

medial line; a minutely dentate postmedial line bent outwards below costa, excurved to vein 4, then incurved.

Hab. U.S.A., Utah, Stockton, co-types † ♂ ♀ in Coll. Rothschild. *Exp.*, ♂ 36, ♀ 38 millim.

404. Euxoa confusa.

Agrotis confusa, Alph. Hor. Soc. Ent. Ross. xvii. p. 61, pl. 2. f. 47 (1882); Staud. Cat. Lep. pal. p. 136.

Agrotis subconspicua, Staud. Stett. ent. Zeit. 1888, p. 13; id. Cat. Lep. pal. p. 149.

♂. Head and thorax grey mixed with brown; abdomen brownish grey, the anal tuft mixed with yellow. Fore wing grey irrorated with brown; the subbasal line represented by indistinct black spots below costa and cell; the antemedial line waved, angled outwards above inner margin, blackish, defined by grey on inner side; claviform defined by black; orbicular and reniform whitish, rather incompletely defined by black; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line represented by a rather obscure series of dentate blackish marks, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pale suffused with brown, and tinged with ochreous towards inner margin; cilia white with brown line at base; the underside white irrorated with brown, a slight discoidal lunule and some brown suffusion on terminal area.

Hab. W. Turkestan, Ferghana; E. Turkestan, Ili, Korla; Mongolia, Uliassatai Mts., 1 ♂. *Exp.* 36 millim.

405. Euxoa subdecora. (Plate LXIII. fig. 9.)

Agrotis subdecora, Staud. Stett. ent. Zeit. 1888, p. 7; id. Cat. Lep. pal. p. 144.

♂. Head and thorax grey mixed with brown; abdomen grey-white, dorsally tinged with ochreous towards extremity. Fore wing brownish grey irrorated with white; a waved fuscous antemedial line from costa to submedian fold; a nearly straight erect antemedial line; hardly a trace of the stigmata; postmedial line dentate, slightly bent outwards below costa, excurved to vein 4, then incurved; traces of a subterminal line, slightly angled outwards at vein 7 and excurved at middle; a brown line at base of cilia. Hind wing white, the veins and marginal areas tinged with brown; cilia white; the underside white, the costal and terminal areas irrorated with brown, a slight discoidal point and curved postmedial line.

Hab. Asia Minor, Pontus; W. Turkestan, Turcomania, 1 ♂, Ferghana, Issyk Kul. *Exp.* 34 millim.

406. Euxoa acornis. (Plate LXIII. fig. 10.)

Carneades acornis, Smith, Ent. News Philad. vi. p. 335, pl. 15. f. 6 (1895).

♂. Head and thorax very pale brown; tarsi banded with black;

abdomen brownish white. Fore wing whitish, tinged with pale brown and very slightly irrorated with black; faint traces of an oblique waved antemedial line, of brown-defined orbicular and reniform stigmata, the former upright, elliptical, of a regular postmedial line bent outwards below costa, excurved to vein 4, then incurved, and of a subterminal series of dark points; a terminal series of black points. Hind wing white, with slight diffused subterminal fuscous band; the underside with the costal area irrorated with brown, a discoidal point.

Hab. Canada, Br. Columbia, Calgary, 1 ♂. *Exp.* 36 millim.

407. Euxoa birivia.

Noctua birivia, Schiff. Wien. Verz. p. 71 (1776); Hübn. Samml. Eur. Schmett., Noct. f. 631; Herr.-Schäff. Schmett. Eur. ff. 9, 10; Treit. Schmett. Eur. v. i. p. 191; Dup. Lép. Fr. v. p. 267, pl. 70. f. 7; Staud. Cat. Lep. pal. p. 144.

Agrotis honnoratina, Donz. Ann. Soc. Ent. Fr. vi. p. 474, pl. 18. ff. 3, 4 (1837).

Agrotis dolis, Grote, N. Am. Ent. i. p. 91 (1880); Smith, Cat. Noct. N. Am. p. 93.

Head and thorax ashy grey, the hairs being brownish tipped with grey; pectus, legs, and abdomen white tinged with brown. Fore wing ash-grey irrorated with ochreous white; an antemedial whitish line, minutely dentate and bent inwards to inner margin, often distinctly angled outwards in submedian fold; the orbicular and reniform defined by ochreous-white lines, the former either round or elongate, the latter constricted at middle; an obliquely curved dentate postmedial line; an indistinct irregularly waved subterminal line; a pale ochreous line at base of cilia. Hind wing white, the veins and terminal area pale brown; cilia white. Underside of both wings with brownish discoidal lunule and postmedial line obsolescent except towards costa.

Hab. Alps of France, Leech Coll.; Switzerland, 1 ♂, 5 ♀, Zeller and Frey Colls.; Italy; Austria, Styria; Hungary, Leech Coll., 1 ♂ Grote Coll. *Exp.* 44 millim. The locality Colorado for the species is incorrect.

Subsp. 1. *taurica*. Staud. Hor. Soc. Ent. Ross. xiv. p. 370 (1878).

Fore wing with the markings pale ochreous instead of white.

Hab. Asia Minor, Taurus; W. Turkestan, Issyk Kul, 1 ♂.

408. Euxoa cænis. (Plate LXIII. fig. 11.)

Agrotis cænis, Grote, N. Am. Ent. i. p. 44 (1879); Smith, Cat. Noct. N. Am. p. 94.

Agrotis muscosa, Grote, Can. Ent. xv. p. 26 (1883).

♀. Head and thorax grey pencilled with brown; many of the hairs tipped with crimson; abdomen grey-white tinged with ochreous brown, and with some crimson on ventral surface. Fore wing grey, suffused and irrorated with crimson; some black points on costa; the orbicular and reniform indistinct, defined by crimson suffusion before and beyond them, the former round, the latter with fuscous

centre; faint traces of waved antemedial, postmedial, and subterminal lines, the second bent outwards below costa and incurved below vein 3, the last irregular; cilia brownish, with a fine pale line at base. Hind wing white, the terminal area tinged with brown.

Hab. U.S.A., Colorado (*Snow*), 1 ♀ type. *Exp.* 42 millim.

*409. Euxoa relaxa. (Plate LXIII. fig. 12.)

Carneades relaxus, Smith, Pr. U.S. Nat. Mus. xxii. p. 432 (1900).

Pale fuscous with a slight reddish tinge; palpi blackish at sides, yellowish at tips; tegulæ with an incomplete brown line near extremities; thorax clothed with flattened hair. Fore wing with the markings fuscous; subbasal line double, only marked below costa and cell; antemedial line double, the inner only marked at costa, slightly oblique and somewhat excurved in interspaces; claviform obsolete; orbicular round or elliptical, defined with fuscous and sometimes with some dark scales at centre; reniform large, extending to a little below cell, defined by black scales and with dusky centre; medial shade indistinct, diffused; postmedial line double, the outer obsolete below vein 4, the inner crenulate, bent outwards below costa, excurved to vein 4, then oblique; subterminal line pale, waved, slightly dentate at veins 3, 4, defined by a dark shade before it and the area beyond it rather darker; a terminal series of small brown lunules. Hind wing pale yellowish, tinged with fuscous on terminal area; a slight discoidal lunule; cilia whitish; the underside whitish with dark irroration.

Hab. U.S.A., California, San Francisco, Sierra Nevada. *Exp.* 38 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*410. Euxoa vulpina. (Plate LXIII. fig. 13.)

Carneades vulpina, Smith, Ent. News Philad. vi. p. 335, pl. xv. f. 5 (1895).

♂. Dull ashen grey; thorax clothed with loose hair. Fore wing with the markings indistinct, the lines just traceable; the antemedial line oblique, waved; claviform obsolete; orbicular small with pale annulus; reniform represented by two parallel pale lines; a fairly prominent diffused dusky medial shade; postmedial line crenulate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by an indistinct series of pale points. Hind wing pale greyish; the underside still paler.

Hab. Canada, Br. Columbia, Calgary (*Dod*). *Exp.* 37 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

411. Euxoa bostoniensis. (Plate LXIII. fig. 14.)

Agrotis bostoniensis, Grote, Proc. Ac. Nat. Sci. Phil. 1874, p. 203; Harv. Bull. Buff. Soc. iii. p. 74, pl. 3. f. 7; Smith, Cat. Noct. N. Am. p. 94.

♂. Head and thorax grey pencilled with brown; palpi brown at

sides; antennæ brown; abdomen grey-brown. Fore wing grey, rather thickly irrorated with dark brown; a double waved subbasal line from costa to vein 1; a double dentate antemedial line with the inner line indistinct, more strongly toothed below costa and above inner margin; a dentate medial line angled outwards to lower angle of cell; no trace of the stigmata; a minutely dentate postmedial line bent outwards below costa, then curved; a minutely dentate subterminal line angled slightly outwards below costa and at vein 3; a terminal series of points. Hind wing white; the veins brownish; the termen irrorated with fuscous. Underside of fore wing with curved postmedial line, of hind wing with postmedial series of points on the veins.

♀. Hind wing brown; the cilia whitish.

Hab. Canada; U.S.A., N., E., & Middle States, Massachusetts, 1 ♂, 1 ♀ type, Grote Coll. *Exp.* 44 millim.

*412. Euxoa sessile. (Plate LXIII. fig. 15.)

Carneades sessile, Smith, Pr. U.S. Nat. Mus. xxii. p. 431 (1900).

Dull, even smoky grey; palpi yellowish at tips; head and thorax clothed with rather flattened hair. Fore wing slightly tinged with red; subbasal line rather indistinct, double, interrupted, blackish; antemedial line double, fuscous, nearly erect from costa to median nervure, excurved below cell and strongly above inner margin; claviform small, defined by fuscous; orbicular irregularly elliptical, oblique, defined by black; reniform large, extending to below cell, irregular and defined by black; medial shade rather broad, diffused and somewhat darkening the cell between the stigmata; postmedial line double, the inner lunulate, the outer more even, bent outwards below costa, excurved to vein 4, then incurved; subterminal line hardly traceable except at costa where it is defined by a dark shade before it; an interrupted black terminal line followed by a yellowish line at base of cilia. Hind wing yellowish tinged with fuscous, paler at base, in male whitish with a dusky discoidal spot; cilia white; the underside whitish, with some dark irroration and a discoidal spot.

Hab. U.S.A., Colorado (*Bruce*), Hall Valley (*Barnes*). *Exp.*, ♂ 40, ♀ 42 millim.

This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*413. Euxoa testula. (Plate LXIII. fig. 16.)

Carneades testula, Smith, Pr. U.S. Nat. Mus. xxii. p. 440 (1900).

♂. Creamy grey irrorated with black; tegulæ with a faint medial line; thorax clothed with long flattened hair. Fore wing with all the markings diffused, obscure; subbasal line double, interrupted, blackish; antemedial line double, diffused at costa, then slender, erect, excurved in interspaces; claviform small, defined by a few black scales only; orbicular rounded, defined by black; reniform

large, broad, narrowly defined by black; medial shade faint, diffused, angled at middle and darkening the space between the stigmata; postmedial line double, blackish, the inner line stronger and lunulate, the outer less prominent, more diffused and lunulate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line irregular, interrupted, pale, defined by a dark shade before it on costa, then by irroration before or beyond it; a terminal series of small fuscous lunules, and a fine yellowish line at base of cilia. Hind wing greyish white, with a rather broad fuscous terminal band; cilia whitish, with a yellowish line at base; veins and discoidal lunule fuscous; the underside grey with dark irroration, a discoidal spot.

Hab. Canada, Br. Columbia, Calgary (*Dod*). *Exp.* 36 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*414. Euxoa tocoyæ. (Plate LXIII. fig. 17.)

Carneades tocoyæ, Smith, Pr. U.S. Nat. Mus, xxii. p. 433 (1900).

♂. Pale dull brick-red over a yellowish ground-colour; thorax clothed with flattened hair. Fore wing with the markings slightly darker, the lines double and filled in by yellowish; subbasal line double, waved; antemedial line nearly erect, excurved in interspaces; claviform hardly traceable; orbicular small, round, defined by yellow; reniform moderate, rather narrow, with blackish centre and yellowish annulus; medial shade narrow, blackish, rather irregular and excurved; postmedial line double, the outer indistinct, even, the inner crenulate, brown, bent outwards below costa, excurved to vein 4, then incurved; subterminal line pale, irregular, interrupted, defined by a dark shade on inner side, the veins beyond it tinged with fuscous; a terminal series of small black lunules and a yellowish line at base of cilia. Hind wing yellowish, suffused with fuscous towards termen, the veins and a discoidal lunule fuscous; cilia yellowish at base, with a brown medial line and white tips; the underside dull yellowish, with darker irroration and a small black discoidal lunule.

Hab. U.S.A., California, High Sierras (*Dyar*). *Exp.* 37 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*415. Euxoa audentis. (Plate LXIII. fig. 18.)

Carneades audentis, Smith, Trans. Am. Ent. Soc. xxi. p. 51, pl. iii. f. 9 (1894).

Pale whitish luteous, sparsely irrorated with black; frons dusky with a blackish line above; tegulæ more strongly irrorated with black at base; thorax clothed with hair. Fore wing with the costa irrorated with black, diffused towards apex, subbasal line double, black, distinct; antemedial line double, the inner line represented by a few black scales, the outer distinct, black, nearly

erect, excurved below cell and above inner margin; claviform and orbicular obsolete; reniform a small black lunule; a broad medial dark shade, angled at middle; postmedial line double towards costa, then single, narrow, crenulate, black, bent outwards below costa, excurved to vein 4, then incurved; subterminal line angled outwards at vein 7 and excurved at middle, defined by a dark shade on its inner side, the area beyond it blackish; a terminal series of small black lunules. Hind wing whitish, with dusky discoidal lunule, a postmedial line and broad terminal band; cilia white; the underside with postmedial line, and in male a discoidal spot.

Hab. U.S.A., Colorado (*Bruce*). *Exp.* 34 millim. This species is unknown to me; figured from Prof. Smith's figure.

*416. Euxoa medialis. (Plate LXIII. fig. 19.)

Agrotis medialis, Smith, Pr. U.S. Nat. Mus. x. p. 459 (1887); id. Cat. Noct. N. Am. p. 95.

♂. Head, thorax, and abdomen white mixed with ochreous and pale brown. Fore wing ochreous-white irrorated with fuscous; the subbasal line very indistinct, double, from costa to vein 1; the antemedial line somewhat more distinct, double, waved, somewhat oblique; claviform obsolete; orbicular and reniform with undefined fuscous centres, the former round; an indistinct medial shade oblique from costa to median nervure, where it is angled, then inwardly oblique; the postmedial line indistinct, double, dentate, bent outwards below costa, excurved to vein 3, then oblique; the subterminal line defined by fuscous on its inner side and slightly angled at veins 6 and 4; a terminal series of black points. Hind wing white; the veins, a discoidal point, the termen, and a fine terminal line pale brown. Underside white, the fore wing and costal area of hind wing irrorated with pale brown.

♀. Hind wing more suffused with fuscous.

Hab. U.S.A., Texas, Colorado (*Bruce*), in Coll. Schaus. *Exp.* 46 millim.

417. Euxoa feniseca. (Plate LXIII. fig. 20.)

Agrotis feniseca, Harv. Bull. Buff. Soc. Nat. Sci. iii. p. 74, pl. 3. f. 6 (1875); Smith, Cat. Noct. N. Am. p. 95.

♂. Head and thorax pale ochreous brown pencilled with dark brown; palpi blackish at sides; tegulæ with medial indistinct dark line; abdomen ochreous brown; pectus and ventral surface of abdomen whitish. Fore wing ochreous brown; a double waved subbasal line from costa to submedian fold; a double waved antemedial line, dentate outwards in cell; the claviform indistinct with blackish outline; the orbicular and reniform with blackish outline, the former round and large, the latter large; a dentate postmedial line bent outwards below costa, excurved to vein 3, then incurved; an irregularly dentate subterminal line; a terminal series of small black lunules. Hind wing white, the veins and a terminal line

brownish; the underside with discal point and some postmedial points on the veins.

♀. Hind wing suffused with brown except in cell, the underside with discoidal lunule and curved postmedial line.

Hab. U.S.A., Colorado (*Bruce*), 1 ♀, California (*Walsingham*), 10 ♀, Sanzalito, 4 ♂, 7 ♀ type. *Exp.* 44 millim.

*418. Euxoa difformis. (Plate LXIII. fig. 21.)

Carneades difformis, Smith, Pr. U.S. Nat. Mus. xxii. p. 441 (1900).

Dull grey or fuscous with dark irroration; tegulæ with fuscous medial line; thorax clothed with fine hair mixed with flattened hair. Fore wing with the markings rather coarse; subbasal line double, black, slender, very close to base; antemedial line oblique, double, excurved in interspaces and interrupted at the veins, the inner line fine, brown, the outer strong, black; claviform small, almost obsolete or fairly prominent; orbicular moderate or small, rounded, grey defined by black; reniform moderate or rather small, somewhat constricted at middle, with fuscous centre and fine black outline; medial shade slightly curved; postmedial line double, the outer even, brown, the inner strong black or fuscous, lunulate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line irregularly sinuous, grey, defined on inner side by a broad irregular shade often intersected with grey at veins, the terminal area with dusky irroration; a terminal series of black or brown lunules; cilia yellowish fuscous. Hind wing white, with a yellowish tinge in male, yellowish tinged with fuscous in female, the veins and a discoidal lunule darker; the male with traces of postmedial line, the area beyond it slightly tinged with fuscous; a dark terminal line; the underside whitish, with distinct discoidal spot and broad blackish postmedial line.

Antennæ with the serrations long.

Hab. U.S.A., Oregon (*Schaus*). *Exp.* 30–33 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

419. Euxoa grisescens.

Noctua grisescens, Fabr. Ent. Syst. 3, ii. p. 110 (1794); Treit. Schmett. Eur. v. i. p. 193; Herr.-Schäff. Schmett. Eur., Noct. ii. p. 332, f. 418; Staud. Cat. Lep. pal. p. 145.
Noctua candelisequa, Hübn. Eur. Schmett., Noct. f. 493 (1827).
? *Noctua ignicola*, Hübn. Eur. Schmett., Noct. f. 546 (1827).
Agrotis corrosa, Herr.-Schäff. Eur. Schmett., Noct. f. 141 (1845).
Agrotis latens, Boisd. Ic. Lep. Eur. pl. 180. f. 2 (1832).
Agrotis thianschanica, Staud. Iris, xii. p. 339 (1899).
Agrotis hyrcana, Staud. Iris, xii. p. 339 (1899).

Head and thorax brownish grey tinged with fuscous; palpi blackish except at tips; legs blackish, the tarsi ringed with white; abdomen brownish grey, dorsally irrorated with fuscous. Fore wing brownish grey irrorated with black; a waved black subbasal line from costa to submedian fold; a waved black antemedial line, slightly angled outwards below costa; orbicular and reniform

very indistinctly defined by blackish, and with a quadrate black spot between them on the more or less developed diffused waved medial shade; the postmedial line strongly dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line defined by diffused black on its inner side, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing whitish tinged with brown; the terminal area fuscous brown; cilia white; the underside whiter, the costal and terminal areas irrorated with brown; a curved brown postmedial line to both wings.

Ab. 1. *thianschanica.* Smaller; fore wing greyish white with the markings less prominent.—Ili; Thianschán Mts.

Ab. 2. *hyrcana.* Yellowish grey; the wings almost without markings below.—Persia.

Hab. France, Pyrenees, Cannes, Leech Coll.; Italy; Switzerland, Zeller and Frey Colls.; Hungary and Silesia, mountains; Scandinavia; Persia; E. Turkestan, Ili, Thianschán Mts. *Exp.* 40–42 millim.

Larva. Rühl, Soc. Ent. i. p. 138.

Head yellow-green with dark points; body fuscous green with dorsal, subdorsal, and lateral white lines and oblique dark subdorsal marks. Food-plant, *Leontodon taraxacum.*

420. Euxoa decora.

Noctua decora, Schiff. Wien. Verz. p. 313 (1776); Hübn. Samml. Eur. Schmett. Noct. f. 45; Dup. Lép. Fr. vi. p. 84, pl. 78; Herr.-Schäff. Schmett. Eur. ii. p. 334. f. 459; Boisd. Ic. Lep. Eur. pl. 81. f. 2; Staud. Cat. Lep. pal. p. 144.
Noctua nebulosa, Hübn. Samml. Eur. Schmett., Noct. f. 402 (1827).
Agrotis marcens, Christ. Iris, vi. p. 90 (1893).
Agrotis livida, Staud. Cat. Lep. pal. p. 144 (1901).

Head and thorax grey mixed with pale brown; tarsi banded with fuscous; abdomen whitish, dorsally tinged with brown, and with ochreous towards extremity. Fore wing grey mixed with pale brown; traces of a waved subbasal line from costa to submedian fold; a waved antemedial line; claviform sometimes present, yellowish; orbicular and reniform indistinct, whitish or yellowish, the former round, a waved medial shade passing between them, oblique from costa to lower angle of cell where it is angled; a dentate postmedial line strongly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line whitish, defined by dark suffusion on inner side, obscurely dentate, angled outwards at vein 7 and excurved at middle; a fine pale line at base of cilia. Hind wing whitish; the veins brown; the terminal area suffused with brown; cilia white with a brown line near base; underside white, the costal and terminal areas irrorated with brown, a curved postmedial line.

Ab. 1. *livida.* Much darker; fore wing leaden grey; hind wing fuscous.—High Alps; Caucasus.

Hab. S. France, Leech Coll., ? Pyrenees; Germany; Austria, Leech Coll.; Switzerland, Zeller & Frey Colls.; Italy; Caucasus; Armenia, Kasikoporan. *Exp.* 38–42 millim.

421. Euxoa simplonia.

Noctua simplonia, Geyer, Samml. Eur. Schmett., Noct. ff. 798, 799 (1827); Boisd. Ic. Lép. Eur. pl. 82. ff. 1, 3; Dup. Lép. Fr. Suppl. iii. p. 209, pl. 19. f. 5; Herr.-Schäff. Schmett. Eur. ii. ff. 478, 479; Staud. Cat. Lep. pal. p. 145.

Head and thorax grey mixed with brown; palpi black-brown; tegulæ with dark brown medial band; pectus and legs mostly black-brown, the tarsi with white rings; abdomen dark brown. Fore wing bluish grey irrorated with brown; the costa yellowish; a waved subbasal brown line from costa to submedian fold, with a yellowish patch beyond its lower extremity; an irregularly waved strong antemedial brown line; claviform only defined by a yellowish patch beyond it; orbicular obsolete; reniform small, fuscous, with a yellowish patch before it in cell; a medial shade angled outwards to lower angle of cell; a postmedial brown line strong, dentate, slightly bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct, obscurely dentate, angled outwards at vein 7 and excurved at middle; a terminal series of dark points; cilia yellow. Hind wing fuscous brown, deeper towards termen; cilia ochreous white; the underside grey irrorated with brown, a dark discoidal spot, curved postmedial line, and traces of subterminal line.

Ab. 1. Fore wing more suffused and irrorated with brown, the yellow obsolescent.

Hab. France, Pyrenees, Leech Coll.; Switzerland, Zeller & Frey Colls.; Italy. *Exp.* 40 millim.

422. Euxoa culminicola.

Agrotis culminicola, Staud. Berl. ent. Zeit. 1870, p. 107; Mill. Ic. pl. 148. ff. 2, 3; Stndf. Iris, i. p. 211, pl. 10. ff. 1, 2, & pl. 11. f. 1 (genit.); Hofm. Gr. Schm. ed. ii. pl. 34. f. 6; Staud. Cat. Lep. pal. p. 145.

♂. Head and thorax grey mixed with dark brown and ochreous; abdomen pale ochreous, the ventral surface white irrorated with brown. Fore wing pale fuscous, suffused with pale yellow scales and irrorated with black; traces of a waved subbasal line from costa to submedian fold; an indistinct oblique waved antemedial line; orbicular represented by a fuscous point; reniform indistinct, fuscous; a slight medial shade angled outwards to lower angle of cell; the postmedial line highly dentate, bent outwards below costa, somewhat incurved in discal fold and incurved below vein 4; faint traces of a subterminal line angled outwards at vein 7 and excurved at middle; cilia yellow irrorated with black. Hind wing whitish, suffused and irrorated with fuscous brown, especially towards termen; cilia pale yellow; the underside whitish, the costal and terminal areas irrorated with brown.

Hab. Switzerland, High Alps, Gorner Grat, 3 ♂, Frey Coll. *Exp.* 42–46 millim.

*423. Euxoa vallus. (Plate LXIII. fig. 22.)

Carneades vallus, Smith, Pr. U.S. Nat. Mus. xxii. p. 430 (1900).

♀. Pale luteous suffused with pale grey; palpi yellow in front, fuscous at sides; vertex of head and base of tegulæ whitish, the latter tipped with yellowish hair; head and thorax clothed with hair, tipped with yellowish posteriorly. Fore wing thickly irrorated with black, especially beyond the antemedial line; the lines single; subbasal line distinct, blackish, excurved from costa to vein 1; antemedial line fuscous, curved, excurved in interspaces especially below cell; orbicular moderate, round, rather paler than ground-colour; reniform moderate, with dusky centre and incomplete outline; medial shade broad, diffused, somewhat angled outwards at middle; postmedial line indistinct, crenulate, unusually near termen, bent outwards below costa, excurved to vein 4, then oblique; subterminal line represented by an obscure series of dark spots. Hind wing pale fuscous grey, the terminal area hardly darker; the veins and discoidal lunule rather darker; the underside silky yellowish grey, with blackish streak in cell, slight discoidal spot, and traces of postmedial line.

Hab. Canada, Br. Columbia, Laggan, 5000 ft. (*Bean*). *Exp.* 40 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*424. Euxoa luteosita. (Plate LXIII. fig. 23.)

Carneades luteositus, Smith, Pr. U.S. Nat. Mus. xxii. p. 433 (1900).

Dull luteous, the thorax and fore wing tinged with rufous; thorax clothed with hair. Fore wing with the basal and terminal areas pale, the medial area shaded with rufous and blackish; the lines distinct; the subbasal line single, waved from costa to submedian fold; antemedial line single, waved, somewhat excurved in submedian fold; claviform obsolete; orbicular large, pale, rounded; reniform with dusky centre and pale annulus; medial shade indistinct, diffused, more prominent in female; postmedial line produced to slight points at the veins, bent outwards below costa, excurved to vein 4, then strongly incurved; subterminal line very even, defined by a series of small dentate dark marks on inner side; a terminal series of small lunules. Hind wing dark fuscous, paler at base; a dark discoidal lunule; cilia yellowish; the underside pale reddish luteous, a discoidal lunule and incomplete postmedial line.

Antennæ of male with the serrations slight and the fasciculate cilia short.

Hab. U.S.A., Colorado, Hall Valley (*Barnes*). *Exp.* 36 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*425. Euxoa extranea.

Agrotis extranea, Smith, Pr. U.S. Nat. Mus. x. p. 459 (1887); id. Cat. Noct. N. Am. p. 95.

♀. Dark ashen grey. Fore wing with the lines distinct; the subbasal line well-marked; the antemedial line indistinctly double, erect, slightly lunulate in interspaces; orbicular and reniform distinctly defined by blackish, the former small, round, the latter erect, rather narrow; a distinct diffused medial shade; postmedial line even, bent outwards below costa, excurved to vein 4, then incurved, slightly sinuous towards inner margin; subterminal line very irregular, only defined by the area beyond it being rather darker. Hind wing yellowish fuscous; the underside with dark irroration, discoidal lunule, and postmedial line.

Hab. U.S.A., Montana. *Exp.* 37 millim. This species is unknown to me.

*426. Euxoa trifasciata.

Agrotis trifasciata, Smith, Pr. U.S. Nat. Mus. x. p. 460 (1887); id. Cat. Noct. N. Am. p. 95.

♀. Deep red-brown slightly irrorated with bluish grey. Fore wing with the lines black; the subbasal line prominent; the antemedial line far from base, single, erect, slightly irregular; claviform very small but prominent; orbicular large, round, irrorated with grey and partly defined by black; reniform defined by black, the sides marked with yellowish scales; medial shade darkening the cell between the stigmata, then approximated to the postmedial line, which is single, somewhat diffused, bent outwards below costa, excurved to vein 4, then incurved; subterminal line pale, punctiform, very even. Hind wing fuscous; the underside irrorated with reddish grey, a slight postmedial line.

Hab. U.S.A., Oregon, Mount Hood. *Exp.* 37 millim. This pecies is unknown to me.

*427. Euxoa bifasciata. (Plate LXIII. fig. 24.)

Agrotis bifasciata, Smith, Pr. U.S. Nat. Mus. x. p. 460 (1887); id. Cat. Noct. N. Am. p. 95.

♂. Fore wing ferruginous at base, shading into blackish towards termen; the lines broad, single, black, approximated; subbasal line prominent; antemedial line slightly waved, oblique; claviform obsolete; orbicular and reniform traceable, but very faint; medial shade nearly straight, even, touching the postmedial line at costa and inner margin; postmedial line bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct, pale, angled outwards at vein 7 and excurved at middle. Hind wing reddish fuscous; the underside ochreous tinged with fuscous, some dark irroration, a discoidal lunule and postmedial line.

Hab. U.S.A., Arizona. *Exp.* 35 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*428. Euxoa comosa.

Agrotis comosa, Morr. Proc. Bost. Soc. N. H. xviii. p. 238 (1876); Smith, Cat. Noct. N. Am. p. 95.

♂. Rather pale brick-red; thorax clothed with hair. Fore wing with the lines blackish; antemedial line double, erect, excurved in interspaces; claviform and orbicular obsolete; reniform dusky lunulate; medial shade well-defined, erect, almost in middle of medial area; postmedial line single, very strongly crenulate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line sinuous, defined on inner side by a dark shade, the area beyond it rather dark. Hind wing reddish fuscous; the underside irrorated with reddish, an indistinct discoidal spot and postmedial line.

Hab. U.S.A., Colorado. *Exp.* 37 millim. This species is unknown to me.

*429. Euxoa dacota.

Carneades dakota, Smith, P. U.S. Nat. Mus. xxii. p. 442 (1900).

♂. Clay-yellow irrorated with fuscous; thorax clothed with coarse, somewhat flattened hair. Fore wing with the markings blackish; subbasal line prominent, double, the two parts well separated; antemedial line with double spots at costa, then single, erect or somewhat oblique, excurved in interspaces and defined by pale colour on inner side; claviform obsolete; orbicular obsolete or represented by a dark point; reniform blackish or fuscous; medial shade broad, diffused, almost erect; postmedial line double at costa, then single, slender, crenulate, bent outwards below costa, excurved to vein 4, then obliquely incurved; subterminal line represented by a slight dark shade; a terminal series of fuscous lunules. Hind wing dirty grey at base, the terminal area fuscous; cilia nearly white; the underside whitish with dark irroration, a dark discoidal lunule and postmedial line.

Hab. U.S.A., Dakota. *Exp.* 32–34 millim. This species is unknown to me.

430. Euxoa brocha. (Plate LXIII. fig. 25.)

Agrotis brocha, Morr. Proc. Ac. Nat. Sci. Phil. 1875, p. 56; Smith, Cat. Noct. N. Am. p. 90.

♀. Head, thorax, and abdomen grey with a slight purplish tinge, some of the scales tipped with brown, especially on patagia; palpi black-brown at sides, except towards tips; tegulæ with the basal half and front of thorax black-brown; legs tinged with brown. Fore wing purplish grey, irrorated with black, the costal half striated and suffused with red-brown; faint traces of a rufous antemedial line; orbicular a fuscous point; reniform small, fuscous, with a somewhat oblique rufous line from it to inner margin; the postmedial line represented by an oblique series of very short black streaks on veins 6 to 1; traces of a sinuous rufous subterminal line; a terminal series of small black lunules; cilia pale, with two

brown lines through them. Hind wing whitish tinged with brown, especially on marginal areas; the veins brown; a discoidal point and postmedial points on veins 5 to 2; a lunulate terminal line; cilia white, with a brown line through them; underside with prominent postmedial streaks on veins 8 to 2.

Hab. U.S.A., Nebraska, Kansas, Colorado, 1 ♀, Grote Coll., Nevada. *Exp.* 38 millim.

Egg. French, Can. Ent. xxvii. p. 332 (1895).

Diam. and height ·03 inch; blunt, conical, tapering abruptly to base; with about 60 longitudinal striæ, of which about 30 reach the micropyle, and with indistinct cross striæ; centre of micropyle a rounded eminence; colour grey or whitish, irregularly blotched with red.

Larva. Young; length ·07 inch; cylindrical; colour smoky-white; head black; warts moderate, with a whitish hair from each.

2nd stage: ·15 inch; pale greenish brown; head black; warts small, black; a small cervical shield.

Food-plants: clover and radish in confinement.

431. Euxoa trux.

Noctua trux, Hübn. Samml. Eur. Schmett., Noct. ff. 723, 725, 770 (1826); Boisd. Icon. Lép. Eur. pl. 79. f. 4; Staud. Cat. Lep. pal. p. 151.
Agrotis lenticulosa, Dup. Lép. Fr. vi. pl. 72. ff. 5, 6 (1826).
Agrotis terranea, Frr. Beitr. Eur. Schmett. 34. 1 (1827).
Agrotis lunigera, Steph. Ill. Brit. Ent., Haust. ii. p. 113, pl. 20. f. 2 (1829).
Agrotis olivina, Staud. Cat. Lep. pal. p. 152 (1901).
Agrotis amasina, Staud. Cat. Lep. pal. p. 152 (1901).

Head and thorax ochreous, suffused with rufous to fuscous brown, irrorated with grey; palpi with dark band near extremity of 2nd joint; tibiæ and tarsi with blackish bands; abdomen pale, dorsally tinged with fuscous brown, ventrally irrorated with brown. Fore wing ochreous grey, strongly irrorated, striated, and largely suffused with pale rufous or fuscous brown; the subbasal line indistinct, double, waved from costa to vein 1; a double, waved, antemedial line angled outwards below costa and strongly above inner margin; claviform moderate, more or less strongly outlined with black, sometimes filled in with black; orbicular and reniform with brown centres and pale annuli defined by brown or black, the former rather small, round, the latter placed on the diffused medial shade; the postmedial line dentate and produced to minute white points on the veins, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line indistinct, pale, angled outwards at vein 7 and excurved at middle, defined by brown suffusion or small dentate black marks on inner side; a terminal series of black points; cilia pale rufous, with a fine brown line through them. Hind wing white, the veins and terminal area fuscous brown; the underside with the costal area irrorated with brown; a postmedial series of striæ on the veins.

Ab. 1. *olivina*. Fore wing with a slight greenish or violaceous tinge.

Ab. 2. *terranea*. Fore wing ochreous or pale rufous.

Ab. 3. *amasina*. Fore wing fuscous grey, darker in female, with the medial shade blackish.

Ab. 4. *lunigera*. Fore wing suffused with dark brown in male, fuscous in female; the claviform filled in with black; the orbicular white defined by black.—Britain, south.

Hab. Britain, south, Zeller & Leech Colls.; France, south, Zeller Coll.; Switzerland, Frey Coll.; Spain; Italy; Sicily; Dalmatia; Algiers; Canaries; S. Russia, Sarepta, 1 ♀, Zeller Coll.; Asia Minor, Pontus. *Exp.* 38–44 millim.

Larva. Meyr. Brit. Lep. p. 92; Barrett, Lep. Brit. iii. p. 315, pl. 128. f. 1.

Dull brownish, greyer at sides, sometimes tinged with greenish; dorsal, subdorsal, and spiracular lines slightly paler, sometimes dark-edged; head brownish, marked with black; thoracic plate blackish, intersected by the yellow dorsal line. Food-plants: *Polygonum*, *Chenopodium*, *Plantago*. 8–10.

432. Euxoa psammophæa. (Plate LXIII. fig. 26.)

Agrotis psammophæa, Meyr. Faun. Hawai. i. p. 151 (1899).

♂. Head pale red-brown; palpi blackish; tegulæ with the basal half black, the tips pale; thorax pale red-brown, irrorated with black or deep ferruginous brown; legs mostly blackish; abdomen pale brown suffused with fuscous, the anal tuft rufous. Fore wing ochreous or reddish brown irrorated with black; a double, waved, subbasal line from costa to submedian fold; a double, waved, antemedial line, angled outwards below costa and more strongly above inner margin; claviform more or less prominently defined by black; orbicular and reniform blackish, sometimes connected by a black streak, the former round; traces of an oblique waved medial shade from lower angle of cell to inner margin; the postmedial line dentate and produced to points on the veins, slightly bent outwards below costa, excurved to vein 4, then oblique; subterminal line represented by pale points on dentate black marks, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing ochreous brown suffused with fuscous; a dark terminal line; the underside paler; the costal area irrorated with black, a black discoidal spot, sinuous postmedial line, and terminal series of points.

♀. Thorax and fore wing suffused with black.

Hab. Hawaii, Haleakala (*Perkins*), 2 ♂, 1 ♀ type. *Exp.* 40 millim.

433. Euxoa sculptilis. (Plate LXIII. fig. 27.)

Agrotis sculptilis, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 271 (1874); id. iii. p. 73, pl. 3. f. 2; Smith, Cat. Noct. N. Am. p. 95.
Carneades xyliniformis, Smith, Bull. U.S. Nat. Mus. 38. p. 221 (1890).

♂. Head and thorax brown mixed with grey; tegulæ with a black medial line and reddish-brown tips; patagia blackish at extremities; abdomen grey strongly irrorated with brown, the

anal tuft tinged with ochreous. Fore wing with the basal half grey, irrorated with brown, the terminal half black-brown; a double black subbasal line from costa to vein 1, angled inwards on vein 1; a double sinuous antemedial line strongly angled outwards below costa and above inner margin; the claviform large, elongate, defined by black; the orbicular large, round, black-edged; the outer edge of the grey area angled on median nervure; the reniform large, black-edged, rather indistinct; the postmedial line double, minutely dentate, strongly bent outwards below costa, excurved to vein 3, then incurved; faint traces of an irregular subterminal line. Hind wing white irrorated with brown; the veins and a terminal line brown; the underside with discoidal point and indistinct minutely-waved postmedial line.

Hab. U.S.A., Texas, New Mexico, 1 ♂ type. *Exp.* 44 millim.

434. Euxoa dædala.

Acronycta dædala, Druce, Biol. Centr.-Am., Het. i. p. 260, pl. 26. f. 8 (1889).

♀. Head and thorax dark brown mixed with grey; palpi with some black at sides; tegulæ with blackish medial line; tarsi with whitish rings; abdomen fuscous brown mixed with grey. Fore wing dark grey irrorated with black, the terminal half suffused with fuscous, except towards costa beyond the medial line; a fine double, waved, black subbasal line from costa to submedian fold; a similar antemedial line angled inwards on median nervure and vein 1; claviform, orbicular, and reniform large, defined by fine black lines; a medial black shade diffused on outer side and angled on median nervure; the postmedial line double, indistinct, dentate, bent outwards below costa, slightly angled inwards in discal fold, and incurved below vein 4; traces of a dentate subterminal line, with a dark patch before it on costa; a terminal series of black points. Hind wing whitish, strongly suffused with dark brown, less so towards base; cilia white, with a brown line near base; the underside whitish, strongly irrorated with black-brown, two discoidal points, an indistinct curved postmedial line, and terminal series of black striæ.

Hab. Guatemala, Quezaltenango, 7800 feet (*Champion*), 1 ♀ type, Godman-Salvin Coll. *Exp.* 36 millim.

435. Euxoa murdoci. (Plate LXIII. fig. 28.)

Agrotis murdocki, Smith, Trans. Am. Ent. Soc. xvii. p. 49 (1890); id. Cat. Noct. N. Am. p. 99.

Head and thorax ferruginous brown, slightly mixed with grey; abdomen ochreous; pectus, legs, and ventral surface of abdomen whitish. Fore wing ferruginous brown, the medial area suffused with bluish grey; the subbasal line double, waved from costa to vein 1; the antemedial line evenly curved, double, the inner line brown, the outer black; claviform wanting; orbicular and reniform grey, defined by some black scales on inner and outer edges and

with ferruginous in cell between them, the orbicular round, the reniform with fuscous centre; the postmedial line minutely dentate, black, bent outwards below costa, excurved to vein 3, then incurved, and with some fuscous suffusion on its inner side; the termen fuscous, its inner edge representing the subterminal line, which is sinuous and angled inwards at discal fold; a terminal series of dark points; cilia rufous. Hind wing brown tinged with fuscous, rather darker in female; cilia pale brown at base, white at tips; underside whitish, with the costal and terminal areas irrorated with brown, a discoidal point, curved postmedial line, and terminal series of points.

Hab. CANADA, Br. Columbia; U.S.A., Utah, California (*Walsingham*), 1 ♂, 1 ♀. *Exp.* 32 millim.

436. Euxoa cursoria.

Phalæna cursoria, Hüfn. Berl. Mag. iii. p. 416 (1767); Hübn. Samml. Eur. Schmett., Noct. f. 540; Boisd. Ic. Lép. Eur. pl. 79. f. 3; Staud. Cat. Lep. pal. p. 148.
Noctua mixta, Fabr. Ent. Syst. iii. 2, p. 118 (1794).
Noctua sagitta, Hübn. Samml. Eur. Schmett., Noct. f. 596 (1827).
Agrotis obscura, Staud. Cat. Lep. ed. ii. p. 86 (1871).
Agrotis cespitis, Swinh. Trans. Ent. Soc. 1885, p. 349, pl. 9. f. 4; Hmpsn. Moths Ind. ii. p. 184.
Agrotis sagittata, Staud. Iris, ix. p. 249 (1896); Herr.-Schäff. Eur. Schmett., Noct. f. 26.
Agrotis currens, Staud. Iris, ix. p. 249 (1896).
Agrotis vaga, Staud. Iris, ix. p. 250 (1896).

Head and thorax grey, ochreous or red-brown, often irrorated with darker brown or black: tarsi banded with black; abdomen ochreous or red-brown, usually with darker irroration; a double, waved, brown subbasal line from costa to submedian fold; a double, waved, antemedial line; claviform usually with its extremity defined by brown; orbicular and reniform defined by brown, usually with greyish centres and whitish annuli, the former oblique, elliptical, the latter usually with blackish patch in its lower extremity; an indistinct oblique waved medial line from lower angle of cell to inner margin; postmedial line double, minutely dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line pale, defined on each side by brown and with darker patches before and beyond it, angled outwards at vein 7 and dentate at veins 3, 4; a terminal series of black points. Hind wing ochreous white, the terminal area tinged with brown; the underside whiter, with dark discoidal point and terminal series of black points.

Ab. 1. *vaga*. Fore wings uniform brownish grey.—C. Asia.

Ab. 2. *currens*. Darker; hind wings entirely suffused with brown.—C. Asia.

Ab. 3. *obscura*. Fore wings almost uniform red or red-brown, the orbicular and reniform prominently annulated with white.

Ab. 4. *sagittata*. Fore wings suffused with red-brown, the costal

area to the postmedial line, the orbicular and reniform, and the area before the subterminal line whitish.

Ab. 5. Hind wing entirely white.—Asia Minor.

Hab. Britain, Leech Coll.; France, Sand Coll.; Germany, Zeller & Frey Colls.; Russia, Livonia, Sarepta, Zeller Coll.; Asia Minor, Hadjin; W. Turkestan, Turkomania, 1 ♀; E. Turkestan, Ili; Mongolia, Uliasatai, 1 ♂, 2 ♀, Changai Mts.; Tibet, Amdo; Afghanistan, Quetta (*Swinhoe*), 1 ♂, type *cespitis*. *Exp.* 34–38 millim.

Larva. Meyr. Brit. Lep. p. 94; Barrett, Lep. Brit. iii. p. 329, pl. 129.

Pale ochreous tinged with greenish; dorsal line pale, green-edged; subdorsal and spiracular lines whitish, edged with grey or greenish; head pale ochreous. Food-plants: grasses, *Arenaria*, *Artemisia*, etc. 5–6.

437. **Euxoa friabilis.** (Plate LXIII. fig. 29.)

Agrotis friabilis, Grote, Can. Ent. vii. p. 187, pl. 1. f. 5 (1875); Smith, Cat. Noct. N. Am. p. 99.

♀. Head and thorax dull brown, the scales tipped with grey; palpi with the 2nd joint blackish at sides except at extremity; tarsi with blackish bands; abdomen grey, strongly irrorated with brown. Fore wing dull brown, irrorated and suffused with fuscous; the subbasal line almost obsolete; the antemedial line indistinct, double, waved; claviform indistinct, defined by a few black scales; the orbicular and reniform indistinct, defined by black, the former rather elongate, elliptical, the latter well-developed with its centre defined by fuscous; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 3, then incurved; the subterminal line indistinct, pale, irregularly dentate, with a dark mark on its inner side at costa; a terminal series of black points. Hind wing white suffused with brown, especially on terminal half; the veins brown; cilia white with a brownish line at base; the underside with the costal and terminal areas irrorated with brown; a discoidal point.

Hab. Canada, 1 ♀ type, Ontario, London (*W. Saunders*), 1 ♀; U.S.A., E. States, Maine, New York, Oregon, Dales, 2 ♂, Colorado, California (*Walsingham*), 2 ♂. *Exp.* 36 millim.

438. **Euxoa nigricans.**

Noctua nigricans, Linn. Faun. Suec. p. 322 (1761); Staud. Cat. Lep. pal. p. 149.

Noctua fumosa, Gmel. ed. Syst. Nat. 1. 5. p. 2574 (1788); Hübn. Eur. Schmett., Noct. f. 153; Godt. Lép. Fr. v. pl. 70. ff. 3, 4; Steph. Ill. Brit. Ent., Haust. ii. p. 124.

Noctua rubricans, Esp. Schmett. iv. pl. 130. ff. 2, 3 (1786).

Noctua ursina, Godt. Lép. Fr. v. pl. 71. f. 3 (1824).

Noctua fuliginea, Hübn. Schmett. Eur., Noct. f. 602 (1827); Godt. Lép. Fr. vi. pl. 78. ff. 5, 6.

Noctua carbonea, Hübn. Schmett. Eur., Noct. ff. 700, 701 (1827).

Noctua vilis, Hübn. Schmett. Eur., Noct. f. 511 (1827).

Head and thorax dark brown, mixed ochreous or grey or suffused with purplish or vinous red; palpi blackish at sides; tegulæ with black medial line; tarsi with pale rings; abdomen grey tinged with brown, or dark brown. Fore wing dark fuscous brown, irrorated with grey or ochreous, sometimes suffused with purple or purple-red; the subbasal line represented by black striæ below costa and cell, defined by greyish on outer side; the antemedial line double, waved, somewhat oblique, black filled in with greyish; the claviform slightly defined by black, connected with base by an obsolescent streak in submedian fold and sometimes also with the postmedial line; orbicular and reniform with fuscous centres, and greyish or ochreous annuli defined by black, the former round, sometimes elliptical and produced on inner side, some black often present in cell and beyond orbicular; a waved medial shade; postmedial line black, defined by ochreous or grey on outer side, minutely waved, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line represented by a series of greyish or ochreous points with small dentate black marks on their inner side, angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of black points. Hind wing whitish, the veins and marginal areas suffused with fuscous brown, in female almost entirely suffused; the underside with the costal and terminal areas irrorated with fuscous brown, a dark discoidal spot.

Ab. 1. *rubricans*. Paler and tinged with red.

Hab. Britain, Scotland, England, Leech Coll.; France, Sand Coll.; Germany, Zeller Coll.; Austria; Switzerland, Frey Coll.; Scandinavia; Russia, Livonia, Zeller Coll., Sarepta (*Christoph*); Armenia; Asia Minor, Pontus; W. Turkestan, Ala Tau, Issyk Kul; E. Turkestan, Ili; Mongolia, Changai Mts.; Tibet, Amdo; Siberia; Amurland. *Exp.* 32–40 millim.

Larva. Meyr. Brit. Lep. p. 92; Barrett, Lep. Brit. iii. p. 333, pl. 130.

Ochreous or ochreous brown, sides light grey-green; dorsal and subdorsal lines pale grey-green edged with blackish; spiracular line blackish green; subspiracular line double, whitish; head marked with blackish. Food-plants: *Trifolium*, *Plantago*, *Heracleum*, etc. 4–6.

439. **Euxoa nyctopis**, n. sp. (Plate LXIII. fig. 30.)

Head and thorax reddish brown irrorated with white; pectus brown and grey; tarsi banded with black; abdomen grey-brown. Fore wing reddish brown, the basal area irrorated with grey; a double, waved, subbasal line from costa to submedian fold; a double, waved, somewhat oblique antemedial line; claviform slightly defined by black; orbicular and reniform fuscous defined by black, the former round, the latter with whitish annulus; traces of a waved medial line; the postmedial line double, dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then oblique; a whitish subterminal line, angled outwards at vein 7 and dentate at veins 4 and 3, the area beyond it tinged

with fuscous; a terminal series of black points; a fine whitish line at base of cilia. Hind wing whitish tinged with brown, especially on terminal area; the veins brown; the cilia white, with a brown line at base; the underside with the costal area irrorated with brown, a dark discoidal point, traces of a curved postmedial line and diffused dark subterminal band.

Ab. 1. Thorax with the ground-colour black-brown; fore wing dark brown with the double lines filled in with whitish.—Kuijar.

Hab. Kashmir, Dras (*Leech*), 1 ♂, 1 ♀ type, Kuijar (*McArthur*), 1 ♂. *Exp.* 40 millim.

440. Euxoa intrita. (Plate LXIII. fig. 31.)

Agrotis intrita, Morr. Proc. Bost. Soc. Nat. Hist. xvii. p. 164 (1874); Grote, Can. Ent. vii. p. 68; Smith, Cat. Noct. N. Am. p. 99.

♂. Head and thorax ferruginous brown, sometimes strongly tinged with black and irrorated with a few white scales; abdomen whitish brown, the ventral surface tinged with ferruginous and with a lateral series of black spots. Fore wing nearly uniform ferruginous brown with the markings indistinct, or largely suffused with black with the markings more distinct; a subbasal rufous line from costa to vein 1; a waved antemedial black double line filled in with rufous and angled outwards below costa and above inner margin; the claviform outlined with black; the orbicular and reniform with dark centres and rufous edges defined by black lines, the former round, the latter well-developed; a medial shade or well-defined irregular line from costa to inner margin near the postmedial line, which is minutely dentate, defined by rufous on outer side, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line indistinct or almost obsolete, formed by a series of dentate black marks with slight rufous marks beyond them; a fine pale line at base of cilia. Hind wing whitish tinged with brown, the veins and terminal area yellowish brown; cilia whitish, with a brown line near base; the underside with the costal and terminal areas irrorated with brown; a discoidal point.

Hab. Canada, Br. Columbia, Vancouver I., 2 ♂ type, Grote Coll. (*J. J. Walker*) 1 ♂; U.S.A., California, Arizona. *Exp.* 40 millim.

441. Euxoa rubefactalis. (Plate LXIII. fig. 32.)

Agrotis rubefactalis, Grote, Bull. Geol. Surv. vi. p. 154 (1880); Smith, Cat. Noct. N. Am. p. 97.

Head and thorax reddish brown irrorated with black; palpi white at extremity of 2nd joint; tegulæ with black medial line; abdomen fuscous brown, the anal tuft pale fulvous. Fore wing grey-brown, slightly tinged with rufous and strongly irrorated and suffused with black; the subbasal and antemedial lines pale defined by black, waved, the former from costa to submedian fold, the latter angled outwards in submedian fold; the orbicular and reniform pale, defined by black lines and with fuscous centres, the former round, the latter moderately large; the postmedial line

black, defined by pale brownish on outer side, minutely dentate, strongly bent outwards below costa and incurved below vein 4; the subterminal line pale, defined by a fuscous shade on inner side, slightly angled outwards below costa and excurved at middle; a fine waved black terminal line. Hind wing ochreous brown, the veins and terminal area rather darker; cilia white at tips; the underside irrorated with brown, with small discoidal lunule and traces of postmedial and subterminal lines.

Hab. U.S.A., Washington Terr., 1 ♂, 2 ♀, Grote Coll. type, Colorado. *Exp.*, ♂ 36, ♀ 38 millim.

*442. Euxoa holoberba. (Plate LXIV. fig. 2.)

Carneades holoberba, Smith, Pr. U.S. Nat. Mus. xxii. p. 443 (1900); id. Can. Ent. xxxii. pl. v. f. 9.

♀. Dull fuscous brown with a purplish shade; tegulæ with distinct black medial line, with purplish grey above it; thorax clothed with scales and flattened hair. Fore wing with the markings distinct, the lines blackish, double, filled in with rather pale colour; subbasal line evenly excurved; antemedial line erect or slightly oblique, slightly waved, the inner line less distinct; claviform small, defined by black and a few pale scales; orbicular small or moderate, round or elliptical, pale, with a few dark scales at centre; reniform moderate, incomplete above and below, its centre defined by black, and with pale annulus defined by brown; the cell slightly darker between the stigmata, medial shade indistinct; postmedial line sharply bent outwards below costa, excurved to vein 4, then oblique; subterminal line distinct, pale, more or less interrupted, somewhat angled outwards at veins 7, 4, 3, defined on inner side by a somewhat dentate shade and the area beyond it somewhat darker; a terminal series of small black lunules. Hind wing dull fuscous brown; cilia somewhat paler; the underside fuscous with darker irroration, a discoidal spot and postmedial line.

Hab. Canada, Alberta, Calgary (*Dod*). *Exp.* 38 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

443. Euxoa intolerabilis. (Plate LXIV. fig. 3.)

Agrotis intolerabilis, Püng. Iris, xv. p. 147 (1902).

Head and thorax dark brown mixed with grey; abdomen yellowish brown. Fore wing dark brown, suffused with purplish grey; a double, waved, subbasal line from costa to submedian fold; a double, waved, antemedial line; claviform represented by a slight dark point at its extremity; orbicular and reniform slightly defined by blackish, the former round, an indistinct waved medial line passing between them; the postmedial line dentate and produced to points on the veins, slightly bent outwards below costa, excurved to vein 4, then incurved; traces of a pale sub-

terminal line angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing ochreous, suffused with fuscous brown; the cilia ochreous with a brown line through them; the underside paler, the costal and terminal areas irrorated with brown, a discoidal spot and curved postmedial line.

Hab. Tibet, Kuku Nor, 2 ♂, 2 ♀. *Exp.* 40 millim.

444. Euxoa brevirami. (Plate LXIV. fig. 4.)

Agrotis brevirami, Hmpsn. Moths Ind. ii. p. 183 (1894).

♂. Dark brown; head and thorax with a reddish tinge, the scales and hairs tipped with ochreous. Fore wing with traces of subbasal line from costa to submedian fold; an indistinct waved antemedial line; orbicular and reniform very indistinct, greyish; a dark medial shade oblique from costa to lower angle of cell, then inwardly oblique; postmedial line minutely dentate, defined by paler brown on outer side, bent outwards below costa, slightly incurved in discal fold and incurved below vein 4; subterminal line pale brown, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points; both wings with fine ochreous line at base of cilia.

Hab. Punjab, Murree (*Harford*), 1 ♂ type. *Exp.* 34 millim.

445. Euxoa conspicua.

Noctua conspicua, Hübn. Eur. Schmett., Noct. ff. 718–9 (1827); Staud. Cat. Lep. pal. p. 152.
Agrotis agricola, Boisd. Ind. Meth. Add. p. 3 (1829).
Agrotis lycarum, Herr.-Schäff. Eur. Schmett., Noct. ii. p. 333, ff. 122–4 (1846).
Agrotis squalida, Ev. Bull. Mosc. 1856, ii. p. 181.

Head and thorax brown, mixed with grey and irrorated with black; tegulæ with blackish medial line; tarsi banded with black; abdomen grey, dorsally suffused with fuscous brown. Fore wing grey, suffused with reddish brown and irrorated with fuscous; a double, waved, subbasal line from costa to submedian fold; a double, waved, antemedial line; claviform slightly outlined with black; orbicular and reniform large, grey, defined by black, often with fuscous centres, the former oblique, elliptical; a diffused, waved, medial line; the postmedial line double, dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then oblique; a pale subterminal line, angled outwards at vein 7 and dentate on veins 4 and 3, defined by a dentate fuscous brown band on its inner side, interrupted below costa and with some brown beyond it; a terminal series of black points. Hind wing whitish tinged with brown, especially towards termen and inner margin; the veins brown; cilia white, with a brown line near base; the underside white, the costal and terminal areas irrorated with brown, a dark discoidal point, a curved postmedial series of short streaks on the veins, a terminal series of points.

Ab. 1. Fore wing with the markings indistinct.

Hab. France, Leech Coll.; Spain; Canaries; Greece; S. Russia; Armenia, Caucasus, Leech Coll.; Asia Minor; Syria; Persia, Sharud, Zeller Coll.; W. Turkestan, Ferghana; E. Turkestan, Kuldja, 4 ♂, 3 ♀, Leech Coll.; Amur, 2 ♂, 2 ♀; Kashmir, Kokser (*McArthur*), 1 ♂, Barra Larcha, 1 ♂, 1 ♀, Dras (*Leech*), 1 ♀; Punjab, Rawal Pindi, 1 ♂, 1 ♀. *Exp.* 44–50 millim.

446. Euxoa septentrionalis. (Plate LXIV. fig. 5.)

Mamestra septentrionalis, Wlk. xxxii. 660 (1865).
Carneades incubita, Smith, Pr. U.S. Nat. Mus. xxii. p. 435 (1900).

♀. Head and thorax grey, mixed with pale brownish and black; tegulæ with black medial line; abdomen brownish grey, the ventral surface white irrorated with fuscous, and with sublateral series of black striæ, the anal tuft ochreous. Fore wing brownish grey thickly irrorated with black; a double, waved, subbasal black line from costa to submedian fold; the antemedial line oblique, double, waved, and angled outwards above inner margin; claviform moderate, slightly defined by black; orbicular and reniform with fuscous centres and grey annuli defined by black, the former round, the cell before and between them and the disk beyond reniform suffused with black; a waved medial line angled outwards to lower angle of cell; the postmedial line double, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved, the area beyond it clearer grey; the subterminal line pale, excurved at vein 7 and slightly dentate at middle, defined by a series of small dentate blackish marks on its inner side, and the area beyond it darker; some pale points on costa towards apex; a terminal series of small black lunules. Hind wing whitish, the veins and marginal areas broadly suffused with fuscous brown; cilia white, with a brownish line at base; the underside white, the costal area irrorated with fuscous, the terminal area suffused with fuscous, a small discoidal spot and terminal series of black points.

Hab. Canada, Vancouver I. (*Hawkins*), 1 ♀ type; U.S.A., Oregon, Corvallis, 1 ♀, California. *Exp.* 40 millim.

*447. Euxoa mitis. (Plate LXIV. fig. 6.)

Carneades mitis, Smith, Trans. Am. Ent. Soc. xxi. p. 49, pl. iii. f. 10 (1894).

Reddish luteous irrorated with black. Fore wing with the lines indistinct; subbasal line very near base, single, blackish; antemedial line double, the inner line indistinct, the outer blackish, somewhat oblique, excurved in interspaces; claviform obsolete; orbicular and reniform very indistinct, rather large; an indistinct medial shade darkening the cell between the stigmata in the male; postmedial line crenulate, single, blackish, slightly defined on outer side by a pale shade, bent outwards below costa, excurved to vein 4, then incurved; subterminal line somewhat pale, rather irregular, defined on inner side by an obscure dark shade; a terminal series

of dark points and a pale line at base of cilia. Hind wing white, the underside with discoidal point.

Hab. U.S.A., Colorado, Glenwood Springs (*Barnes*). *Exp.* 30–34 millim. This species is unknown to me; figured from Prof. Smith's plate.

448. **Euxoa perturbata.** (Plate LXIV. fig. 7.)

Carneades perturbata, Smith, Bull. U.S. Nat. Mus. 38. p. 222 (1890); id. Cat. Noct. N. Am. p. 97.

♂. Rather pale ochreous fuscous; head and thorax with black scales mixed; patagia indistinctly edged with black. Fore wing with the basal and postmedial areas paler than the medial and terminal areas; the lines double; the subbasal line double, black; antemedial line distinct, the inner line nearly as strong as the outer, oblique, excurved in interspaces; claviform distinctly defined by black; orbicular rather small, irregularly rounded, with fuscous centre and pale annulus defined by black; reniform rather constricted at middle, somewhat pale, defined by black, and tinged with fuscous at extremities; medial shade rather indistinct and nearly erect; postmedial line bent outwards below costa, excurved to vein 4, then incurved, the inner line distinct, lunulate, the outer line even, fuscous; subterminal line only defined by the dark terminal area and marked by a few irregularly placed black points, irregular and distinctly dentate on veins 4 and 3; a terminal series of small black lunules; cilia with a pale line at base. Hind wing pure white.

Hab. U.S.A., Colorado (*Cockerell*), 1 ♂. *Exp.* 34 millim.

449. **Euxoa objurgata.** (Plate LXIV. fig. 8.)

Carneades objurgata, Smith, Pr. U.S. Nat. Mus. xxii. p. 448 (1900).

♀. Head and thorax grey-brown, irrorated with black and a few white scales; abdomen brownish grey irrorated with black. Fore wing grey-brown, tinged with rufous and irrorated with black; a double, waved, subbasal line from costa to submedian fold, the outer line strong, black; a double, waved antemedial line, the outer line very strong and deep black; claviform moderate, slightly defined by black; orbicular and reniform with greyish annuli defined by black, the former produced to a slight point on inner side, a black fascia in cell before and between them; an indistinct oblique waved medial shade from cell to inner margin; the postmedial line strong, black, dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line pale brown, defined by fuscous on inner side, somewhat dentate, angled outwards at vein 7 and excurved at middle, the area beyond it suffused with fuscous and with terminal series of black points. Hind wing grey suffused with fuscous brown, deeper towards termen; the cilia white; the underside white, the costal and terminal areas tinged with brown and

irrorated with fuscous, a prominent discoidal lunule and strong postmedial line.

Hab. U.S.A., Dakota, Washington, Pullman, Oregon, Corvallis, 1 ♀. *Exp.* 36 millim.

450. Euxoa messoria.

Agrotis messoria, Harris, Rep. Ins. Mass. p. 324 (1841); Smith, Cat. Noct. N. Am. p. 96.
Agrotis spissa, Guen. Noct. i. p. 261 (1852).
Mamestra insulsa, Wlk. ix. 234 (1856).
Mamestra inextricata, Wlk. xxxii. 658 (1865).
Mamestra indirecta, Wlk. xxxii. 659 (1865).
Mamestra displiciens, Wlk. xxxii. 660 (1865).
Mamestra expulsa, Wlk. xxxii. 661 (1865).
Agrotis ordinata, Wlk. xxxii. 691 (1865).
Agrotis reticens, Wlk. xxxii. 692 (1865).
Agrotis cochrani, Riley, Prairie Farmer, July 1868.
Agrotis repentis, Grote & Rob. Trans. Am. Ent. Soc. i. p. 350, pl. 7. f. 58 (1868).
Agrotis confracta, Morr. MS., Smith, Bull. U.S. Mus. 38. p. 169 (1890).

Head and thorax dark brown mixed with grey-brown; abdomen rather paler brown. Fore wing grey-brown, irrorated and suffused with dark brown; a double, waved, subbasal black line from costa to vein 1; a double, waved, antemedial line angled outwards below costa and above inner margin; the claviform outlined with black and usually indistinct; the orbicular and reniform with dark outlines, the former rounded, oblique, elliptical, elongate, or sometimes triangular and open above, the latter large; a strongly dentate postmedial

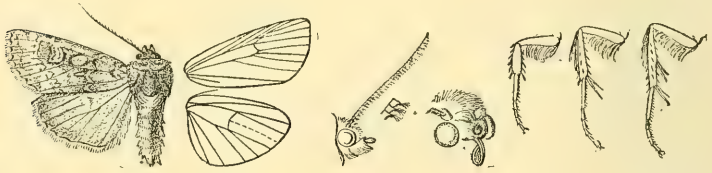


Fig. 61.—*Euxoa messoria*, ♂. ¾.

line bent outwards below costa, excurved to vein 4, then oblique; an irregularly sinuous subterminal line, usually with some dark marks on its inner edge, especially on costa, and the area beyond it rather darker; a fine waved black terminal line; cilia brown, with fine grey lines through them. Hind wing whitish tinged with brown, the veins, costal, terminal and inner areas brown. Underside with the terminal area of fore wing and the costal and terminal areas of hind wing irrorated with brown; both wings with discoidal spot and indistinct curved postmedial line.

Hab. Canada, Nova Scotia (*Redman*) 6 ♂, 1 ♀, (*Norman*) 3 ♂, 1 ♀, Ontario 1 ♂, Renfrew Co. 1 ♂, W. Canada, Orilla (*Bushe*) 1 ♀ type *insulsa*, Vancouver I. (*Hawkins, J. J. Walker*), 6 ♀ type

expulsa; U.S.A., Grote & Zeller Colls., 4 ♂, 4 ♀, New York, 1 ♀, Washington Terr., 2 ♀, Colorado (*Bruce*), 1 ♂, Nevada, 2 ♀, Grote Coll., California, 1 ♀, Grote Coll. *Exp.* 40–44 millim.

Larva. Riley, Rep. Ent. 1885, p. 290, pl. iv. f. 6, & 1886, p. 270, pl. 7. f. 1 (Redescribed.)

Head 3 millim., pale brown, reticulations paler, dividing both the sides and a dark posterior shade into angular spots; curved vertical band distinct only at apex of clypeus and above, angled inward, mottled above. Body light brown, somewhat thin-skinned; cervical shield brown, divided by a pale dorsal line and a light rather blotched subdorsal one. Dorsal space broadly pale, widened in the incisures, faintly shaded with brown, defining the narrow pale dorsal line; lateral space rather darkly brown, showing faintly a pale subdorsal line; substigmatal band broad, whitish, obscure. Tubercles small, obscure, brown; spiracles black. A general feeder.—H. G. D.

451. **Euxoa atropulverea.** (Plate LXIV. fig. 9.)

Carneades atropulverea, Smith, Pr. U.S. Nat. Mus. xxii. p. 428 (1900).

♀. Head and thorax brownish grey mixed with fuscous; abdomen grey irrorated with fuscous. Fore wing grey-brown, thickly irrorated with black; the subbasal line represented by obscure blackish points below costa and cell; the antemedial line very indistinct, double, waved; claviform very faintly indicated; orbicular and reniform very slightly defined by blackish scales; medial shade obscure, angled at median nervure, diffused, the postmedial line indistinct, double, bent outwards below costa, excurved to vein 4, then incurved; faint traces of a subterminal line; an indistinct terminal series of small blackish lunules; a fine ochreous line at base of cilia. Hind wing whitish, suffused with fuscous, especially towards termen; cilia white; the underside white, the costal and terminal areas irrorated with brown. a blackish discoidal bar.

Hab. U.S.A., Colorado, Denver, 1 ♀. *Exp.* 40 millim.

452. **Euxoa micronyx.** (Plate LXIV. fig. 10.)

Agrotis micronyx, Grote, Bull. Geol. Surv. iv. p. 171 (1878); Smith, Cat. Noct. N. Am. p. 99.

♀. Head and thorax dark red-brown, strongly mixed with grey and slightly irrorated with black; palpi blackish at sides; frons and vertex of head with some rufous hair; tegulæ with a black medial line; spurs and tarsal joints banded with black; abdomen grey-brown. Fore wing dark brown strongly suffused with grey; a minutely dentate subbasal black line from costa to vein 1; the antemedial line double, angled outwards in the interspaces, the inner line indistinct; claviform moderate, distinctly outlined with black; orbicular and reniform outlined with black and with fuscous centres, the former round, the latter large and sometimes with excrescence on inner side; a more or less distinct waved medial shade from cell

to inner margin; the postmedial line minutely dentate, strongly bent outwards below costa, excurved to vein 3, then oblique; the subterminal line grey, with a slight rufous shade on its inner side and slightly dentate at veins 7, 4, 3; a terminal series of small black lunules. Hind wing brown, the veins rather darker; cilia whitish, with a dark line near base; the underside whitish, with the costal and terminal areas irrorated with brown; a small discoidal lunule and rather ill-defined curved postmedial line.

Hab. U.S.A., California, 2 ♀ type, Grote Coll. *Exp.* 40 millim.

453. Euxoa hilaris.

Agrotis hilaris, Frr. Neu. Beitr. Schmett. iii. p. 89, pl. 255. f. 4 (1839); Herr.-Schäff. Schmett. Eur., Noct. f. 545; Staud. Cat. Lep. pal. p. 149.
Agrotis conifera, Christ. Hor. Soc. Ent. Ross. xii. p. 249, pl. 6. f. 23 (1877).
Agrotis incognita, Staud. Stett. ent. Zeit. 1888, p. 11; id. Cat. Lep. pal. p. 147.

Head and thorax dark brown mixed with grey; abdomen pale grey-brown. Fore wing dull grey-brown irrorated with fuscous; a double, waved, antemedial line; claviform outlined with black; orbicular and reniform outlined with black, the former rounded; the postmedial line dentate and produced to points on the veins, bent outwards below costa, slightly incurved in discal fold and strongly below vein 4; subterminal line indistinct, greyish, defined by slight dentate dark marks on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points; a fine pale line at base of cilia. Hind wing pale brown; the underside whitish, the costal and terminal areas irrorated with brown, a dark discoidal spot and curved postmedial line.

Ab. 1. *incognita*. Fore wing with the claviform smaller and filled in with black.

Ab. 2. Head, thorax, and fore wing reddish brown, the claviform obsolescent.—Persia.

Hab. Armenia, Caucasus (*Christoph*), 3 ♂, 2 ♀; Asia Minor, Pontus; Persia; W. Turkestan, Turcomania, 1 ♂, Ferghana, Sarawschan; W. Siberia, Altai; E. Siberia, Kentei. *Exp.* 36 millim.

454. Euxoa terrena. (Plate LXIV. fig. 11.)

Carneades terrenus, Smith, Pr. U.S. Nat. Mus. xxii. p. 436 (1900).

♂. Head and thorax brownish grey slightly irrorated with black; tegulæ with slight black medial line; tarsi blackish with pale rings; abdomen brownish grey. Fore wing brownish grey slightly irrorated with black; a double, waved, subbasal line from costa to submedian fold; the antemedial line double, waved, black; claviform indicated by a few black scales; orbicular and reniform grey, incompletely defined by black, the cell before and between them tinged with black; an obscure waved medial line angled outwards on median nervure; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line indistinct,

greyish, slightly defined by fuscous on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing grey tinged with fuscous; the cilia whitish; the underside with the costal area irrorated with brown, a slight discoidal spot and curved postmedial line.

Hab. U.S.A.,Washington, Pullman (*Piper*), 1 ♂. *Exp.* 38 millim.

*455. Euxoa lagganæ. (Plate LXIV. fig. 12.)

Carneades lagganæ, Smith, Pr. U.S. Nat. Mus. xxii. p. 439 (1900); id. Can. Ent. xxxii. pl. 5. f. 7.

♂. Dull dark ashen-grey with fuscous irroration; tegulæ with a black medial line; thorax clothed with scales and flattened hair; patagia edged with black scales. Fore wing with the subbasal line distinct, double, dentate; antemedial line double, the outer strong, black, the inner narrow and fuscous, oblique and excurved in interspaces, more strongly above inner margin; claviform small, defined by fine black scales; orbicular rather pale, defined by black, rounded; reniform narrow, slightly defined by black; medial shade angled at middle and darkening the space between the stigmata; postmedial line double at costa, then single, produced to points on the veins and lunulate, slightly bent outwards below costa, excurved to vein 4, then oblique; subterminal line represented by irregularly placed pale scales, with dark scales on their inner side; a terminal series of black lunules and a fine pale line at base of cilia. Hind wing fuscous grey; cilia with a yellow line at base; underside dull grey, with fuscous discoidal spot and broad diffused terminal band.

Antennæ with the serrations small and the tufts of cilia fine; fore wing broad and somewhat acute at apex.

Hab. Canada, Br. Columbia, Laggan (*Bean*). *Exp.* 33 millim.

This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*456. Euxoa ontario. (Plate LXIV. fig. 13.)

Carneades ontario, Smith, Pr. U.S. Nat. Mus. xxii. p. 440 (1900).

♂. Dull smoky fuscous; head with brown transverse line; tegulæ with dark medial shade; thorax clothed with scales and hair. Fore wing with dark irroration, the medial area somewhat darker, the lines blackish; the subbasal line double, interrupted in cell; antemedial line almost erect, double, the inner line less distinct, irregularly excurved in interspaces; claviform obsolete; orbicular represented by an undefined diffused pale spot; reniform an oblong blackish spot incompletely defined by pale scales; medial shade indistinct; postmedial line double from costa to vein 4, lunulate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by a few pale scales with a slight shade before them, more distinct at costa; a terminal series of brown lunules and a fine pale line at base of cilia. Hind wing fuscous, with a yellowish tinge at base; the veins and discoidal lunule

blackish; cilia whitish; underside grey with dark irroration, a discoidal spot and broad diffused terminal band.

Hab. Canada, Ontario, Sudbury. *Exp.* 33 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*457. Euxoa quinquelinea. (Plate LXIV. fig. 14.)

Agrotis quinquelinea, Smith, Trans. Am. Ent. Soc. xvii. p. 49 (1890); id. Cat. Noct. N. Am. p. 99.

♀. Fuscous grey; tegulæ with a dark medial line; abdomen pale fuscous. Fore wing with the lines blackish; subbasal line distinct, single; antemedial line distinct, single, erect, very slightly waved; claviform obsolete; orbicular and reniform barely traceable, the latter marked on inner side by a black point; medial line distinct, broad, very irregular; postmedial line single, fine, crenulate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by some pale scales defined on inner side by slight dentate dark marks, angled outwards at vein 7 and excurved at middle; a fine interrupted terminal line. Hind wing pale fuscous; the underside with dark irroration, discoidal spot and postmedial line.

Hab. U.S.A., California, Sierra Nevada. *Exp.* 35 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*458. Euxoa itodes. (Plate LXIV. fig. 15.)

Carneades itodes, Smith, Pr. U.S. Nat. Mus. xxii. p. 438 (1900).

♀. Very pale luteous suffused with pale rufous; palpi blackish at sides; tegulæ with fuscous medial line; thorax clothed with hair and scales. Fore wing with the markings pale fuscous brown, distinct; subbasal line double, waved, filled in with pale colour; antemedial line double, the inner less distinct, oblique, slightly excurved in interspaces; claviform represented by a slight yellowish streak; orbicular moderate, rounded, with some dusky scales at centre and yellowish annulus; reniform moderate, extending a little below cell, with leaden-grey or fuscous centre and yellowish annulus; medial shade rather narrow, diffused, oblique and darkening the space between the stigmata; postmedial line single, dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line defined by an irregular shade on inner side most distinct at costa, and by the area beyond it being slightly darker; a terminal series of dusky lunules. Hind wing yellowish white, slightly darker before the distinct terminal line; underside white with a silky yellowish gloss, slight dark irroration, and small discoidal spot.

Hab. U.S.A., Arizona (*Barnes*). *Exp.* 37–40 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*459. Euxoa pedalis. (Plate LXIV. fig. 16.)

Carneades pedalis, Smith, Bull. U.S. Nat. Mus. 38. p. 220 (1890); id. Cat. Noct. N. Am. p. 98.

♂. Head, thorax, and fore wing reddish yellow; tarsi ringed with black. Fore wing with the subbasal line double, pale, the outer line defined by dark scales; antemedial line double, pale, marked at costa by two black spots, defined by dark scales on inner side, even and almost erect; claviform obsolete; orbicular small, round, with pale annulus; reniform moderate, with pale annulus filled in with dark irroration; a rather broad, blackish, somewhat irregular medial shade; postmedial line double, pale, marked on costa by black spots, defined on outer side by a curved black line reduced to irroration below the cell, the inner line crenulate, bent outwards below costa, excurved to vein 4, then incurved, the area beyond it with dark irroration, deepening to black towards termen, defining the pale subterminal line which is rather irregular and prominent except towards tornus, where the dark colour is more diffused; a terminal series of small lunules. Hind wing pure white. Underside white; fore wings with a slight reddish suffusion.

Hab. U.S.A., Colorado (*Bruce*). *Exp.* 34 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*460. Euxoa teleboa. (Plate LXIX. fig. 12.)

Carneades teleboa, Smith, Bull. U.S. Nat. Mus. 38. p. 219 (1890); id. Cat. Noct. N. Am. p. 99.

♀. Pale luteous, faintly tinged with reddish; tarsi ringed with black. Fore wing with the subbasal and antemedial lines obsolete; claviform and orbicular obsolete; reniform distinctly irrorated with black, ill-defined; medial shade broad, diffused, formed by black irroration; postmedial line fine, very indistinct, slightly stronger at the veins; subterminal line indistinct, irregular, faintly traceable through the irroration of black scales that darkens the terminal area. Hind wing pure white.

Hab. U.S.A., New Mexico, Las Vegas (*Meske*). *Exp.* 28 millim. This species is unknown to me; figured from a drawing from type in Brooklyn Inst. Arts & Sci.

*461. Euxoa recticincta. (Plate LXIV. fig. 17.)

Carneades recticincta, Smith, Ent. News Philad. vi. p. 334, pl. xv. f. 7 (1895).

♀. Pale straw-yellow with a luteous tinge. Fore wing with the lines barely traceable except at costa, where they are represented by single black points; antemedial line erect, slightly waved; claviform obsolete; orbicular represented by a pale annulus; reniform obscured by the diffused medial black shade, with its inner edge angled outwards below cell; postmedial line minutely waved, bent outwards

below costa, excurved to vein 4, then incurved; subterminal line represented by a few blackish scales. Hind wing white, with faint discoidal lunule and slight dusky tinge towards termen; the underside silky with a slight yellowish tinge.

Hab. CANADA, Alberta, Calgary (*Dod*). *Exp.* 34 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*462. Euxoa falerina. (Plate LXIV. fig. 18.)

Carneades falerina, Smith, Pr. U.S. Nat. Mus. xxii. p. 429 (1900).

Whitish luteous with deeper luteous shades and fuscous irroration; palpi fuscous at sides; tegulæ with indistinct fuscous medial line. Fore wing with the markings fairly prominent, the lines luteous or fuscous; subbasal line double, represented by fuscous marks below costa and cell; antemedial line double, the inner line less distinct, erect or slightly oblique, interrupted below costa and slightly excurved in interspaces; claviform slightly defined by dark scales; orbicular round, elliptical, or elongate, defined by blackish and in female with fuscous centre; reniform moderate, with fuscous centre and incomplete dark outline; a slight diffused medial shade; postmedial line double at costa, bent outwards below costa, then crenulate, excurved to vein 4, then incurved; subterminal line irregular, angled outwards at vein 7 and excurved at middle, defined on inner side by a slight fuscous shade more distinct at costa, and on outer side by the terminal area being somewhat darker; a terminal series of small brown lunules. Hind wing white, the veins tinged with ochreous; some slight fuscous shading on terminal area and a terminal line; the underside with slight dark irroration, a fuscous discoidal spot and incomplete postmedial line.

Hab. U.S.A., Colorado, Glenwood Springs (*Barnes*), Nevada (*Mrs. Herring*). *Exp.* 37–40 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*463. Euxoa cona. (Plate LXIV. fig. 19.)

Agrotis cona, Streck. Lep. Rhop. et Het. Suppl. i. p. 6 (1898).

♂. Pale ochreous with slight dark irroration. Fore wing with the subbasal line indistinct, double; the antemedial line oblique, double, waved; claviform very faintly defined by dark scales; orbicular large, pale, rounded; reniform with dark irroration at centre and pale ill-defined annulus; medial shade slight, somewhat darkening the cell between the stigmata; postmedial line crenulate, double at costa, bent outwards below costa, excurved to vein 4, then incurved; subterminal line pale, defined on inner side by a slight dark shade, the area beyond it suffused with fuscous, slightly angled outwards at vein 7 and excurved at middle; a terminal

series of dark lunules. Hind wing pure white, with slight discoidal bar and terminal series of dark points.

Hab. U.S.A., Colorado, Glenwood Springs. *Exp.* 36 millim. This species is unknown to me; figured from a photograph from specimen in U.S. Nat. Mus.

*464. Euxoa territorialis. (Plate LXIV. fig. 20.)

Carneades territorialis, Smith, Pr. U.S. Nat. Mus. xxii. p. 436 (1900).

♀. Head and thorax grey, slightly tinged with brown and with some blackish irroration; palpi with black mark on 2nd joint; tegulæ with black medial line; tibiæ and tarsi blackish with white rings; abdomen grey. Fore wing grey with a slight brown tinge and irrorated with black; the subbasal line represented by double striæ from costa and cell; a double, waved, antemedial line angled outwards above inner margin; claviform slightly defined by black; orbicular and reniform defined by black, the former oblique, elliptical, open above; a somewhat dentate medial shade angled outwards at median nervure; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line whitish, defined on inner side by some black points and a more prominent mark at costa and by the area beyond it being darker, angled outwards at vein 7 and excurved at middle; a terminal series of black points; cilia with a grey line through them. Hind wing white, the terminal area slightly tinged with fuscous; a fine dark terminal line; the underside with the costal area irrorated with fuscous, a small discoidal point.

Hab. U.S.A., Washington, Pullman, in U.S. Nat. Mus. *Exp.* 34 millim.

465. Euxoa conjuncta. (Plate LXIV. fig. 21.)

Carneades conjuncta, Smith, Bull. U.S. Nat. Mus. 38. p. 221 (1890); id. Cat. Noct. N. Am. p. 98.

Head and thorax pale brown; pectus and abdomen white slightly tinged with brown. Fore wing very pale brown slightly tinged with fuscous; the subbasal line double, the inner black, waved from costa to submedian fold; the antemedial line double, waved, the outer line black; the claviform obsolete; the orbicular and reniform indistinctly defined by fuscous, the former round; the postmedial line double, the outer black, bent outwards below costa, excurved to vein 3, then oblique; the subterminal line indistinct, pale, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing white; the veins, termen, and a fine terminal line pale brown.

Hab. U.S.A., Colorado, 1 ♂, New Mexico, Las Vegas. *Exp.* 44 millim.

*466. Euxoa lineifrons. (Plate LXIV. fig. 22.)

Carneades lineifrons, Smith, Bull. U.S. Nat. Mus. 38. p. 219 (1890); id. Cat. Noct. N. Am. p. 98.

♂. Whitish ochreous; frons with dark band above. Fore wing with the subbasal line double, interrupted, blackish; antemedial line double, oblique, somewhat irregular; claviform absent; orbicular large, incompletely defined by black scales; reniform moderate, with blackish irroration, not distinctly defined; a broad blackish, waved, medial line angled at lower angle of cell; postmedial line double, the inner line crenulate, prominent, the outer represented by a series of points on the veins, slightly bent outwards below costa, excurved to vein 4, then incurved; subterminal line defined by a dark shade on inner side, the area beyond it rather darker, angled outwards at vein 7 and excurved at middle. Hind wing shading from dirty white at base to blackish at termen; the veins dark; the underside whitish, with discoidal spot.

Hab. U.S.A., Colorado (*Bruce*). *Exp.* 33 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*467. Euxoa cerrvillei. (Plate LXIV. fig. 23.)

Carneades kerrvillei, Smith, Pr. U.S. Nat. Mus. xxii. p. 443 (1900).

♂. Pale creamy-grey with some darker irroration; palpi blackish at sides, head with black band above frons; tegulæ tipped with yellow and with bluish-grey irroration; thorax clothed with scales and hair tipped with yellow; patagia irrorated with grey; a tuft of long white hair at base of abdomen. Fore wing with the lines fuscous; subbasal line single, interrupted, very near base; antemedial line erect or a little inwardly oblique, double, the inner line most distinct, somewhat excurved below cell, the outer line diffused; claviform absent; orbicular large, round, pale with some dark irroration at centre; reniform rather large, faintly defined by fuscous scales, its lower part filled in with grey; medial line rather well defined, somewhat curved; postmedial line single, very even, slightly bent outwards below costa, excurved to vein 4, then oblique; subterminal line represented by a series of small dark spots, with a more distinct spot at costa; a terminal series of very small dusky lunules. Hind wing white, with a small discoidal lunule and narrow diffused terminal band; cilia white; the underside white with darker irroration, a small discoidal lunule.

Hab. U.S.A., Texas, Kerrville (*Barnes*). *Exp.* 36 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*468. Euxoa nili. (Plate LXIV. fig. 24.)

Agrotis nili, Baker, Trans. Ent. Soc. 1894, p. 38, pl. i. f. 6.

♂. Head and thorax brownish grey; palpi tinged with fuscous

at sides; tegulæ with slight medial line; tarsi ringed with fuscous; abdomen white, dorsally irrorated with brown and tinged with ochreous towards extremity. Fore wing brownish grey with slight dark irroration; the subbasal line represented by double striæ from costa and median nervure; antemedial line double at costa, then single, waved, indistinct and angled outwards above inner margin; claviform small, tinged with ochreous and defined by black; orbicular and reniform with fuscous centres and grey annuli defined by black, the former small, rounded, but produced to a small lobe on outer side; medial shade very indistinct, diffused; postmedial line crenulate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line only defined by a slight dark shade before it on costa and the area beyond it being tinged with fuscous except at apex, angled outwards at vein 7 and excurved at middle; a fine waved terminal line, and a brown line through the cilia. Hind wing pure white; the underside with slight dark irroration on costal area and a postmedial series of points almost obsolete except towards costa.

Hab. Egypt, Alexandria, type † ♂ in Mus. Alexandria. *Exp.* 38 millim.

469. **Euxoa choris.** (Plate LXIV. fig. 25.)

Agrotis choris, Harv. Can. Ent. viii. p. 37 (1876); Smith, Cat. Noct. N. Am. p. 97.

Agrotis cogitans, Smith, Trans. Am. Ent. Soc. xvii. p. 46 (1890); id. Cat. Noct. N. Am. p. 90.

♂. Head, thorax, and abdomen brown strongly mixed with grey; tarsi banded with black; abdomen with the anal tuft tinged with ochreous. Fore wing pale luteous brown tinged with grey; a sinuous blackish line in base of submedian fold; pairs of blackish points on costa at the lines, which are double and indistinct; the subbasal line from costa to submedian fold; the antemedial dentate outwards below costa and in cell, excurved below cell and more so above inner margin; claviform elongate, defined by a few black scales; the orbicular elongate, elliptical, defined by a fine black line; the reniform defined by a black line on inner side, ill-defined on outer; the postmedial line represented by a double series of points on the veins, excurved from below costa to vein 4, then incurved; an indistinct sinuous subterminal line excurved at middle; a series of small dark lunules on termen. Hind wing white tinged with brown especially towards termen, the veins pale brown; a brown terminal line; the hair on inner area ochreous; cilia white; underside with the costal area irrorated with brown; a small discoidal lunule and a postmedial series of short streaks on the veins.

Hab. U.S.A., Nevada, 1 ♂ type, Colorado (*Cockerell*), 1 ♀. *Exp.* 40 millim.

470. Euxoa mustelina.

Agrotis mustelina, Christ. Hor. Soc. Ent. Ross. xii. p. 249, pl. 6. f. 22 (1876); id. Rom. Mém. ii. p. 206, pl. 12. f. 6; Staud. Cat. Lep. pal. p. 149.
Agrotis centralis, Staud. Stett. ent. Zeit. 1889, p. 34; id. Iris, ix. p. 368, pl. 4. f. 10.

Head and thorax grey irrorated with brown; tarsi banded with black; abdomen whitish, dorsally tinged with brown, ventrally irrorated with fuscous. Fore wing pale grey-brown irrorated with fuscous; a double, waved, subbasal line from costa to submedian fold; a double, waved, antemedial line; claviform with its extremity outlined with fuscous; orbicular and reniform defined by fuscous, the former round, open above, the cell before and between them more or less tinged with fuscous; a diffused waved medial shade from lower angle of cell to inner margin; the postmedial line double, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale, defined by fuscous on inner side, excurved at vein 7 and dentate at veins 4 and 3; a terminal series of black points. Hind wing white, the veins and terminal area tinged with pale brown; the underside whiter, with discoidal dark point, slight postmedial series of dark striæ on the veins, and diffused subterminal band.

Ab. 1. *centralis*. Head, thorax, abdomen, and fore wing darker, the last with the markings more distinct.

Hab. Asia Minor, Pontus; N. Persia, Shahkuh, 1 ♂, 1 ♀, Zeller Coll.; W. Turkestan, Issyk Kul, 2 ♂, Ili, Saisan; W. Siberia, Altai. *Exp.* 38–40 millim.

471. Euxoa immixta. (Plate LXIV. fig. 26.)

Agrotis immixta, Grote, Bull. Geol. Surv. vi. p. 259 (1880); Smith, Cat. Noct. N. Am. p. 79.

♂. Head and thorax pale red-brown tinged with grey; palpi with the 1st and 2nd joints black at sides; tarsi banded with black; abdomen grey tinged with brown and with ochreous towards extremity. Fore wing pale reddish brown with slight dark irroration; the costal area to the postmedial line and the base of inner area tinged with grey; the subbasal line double, waved, blackish from costa to vein 1; the antemedial line double, waved, oblique, and arising from two black points on costa; claviform obsolete; orbicular and reniform very indistinct, small, greyish; the postmedial line minutely dentate, double, arising from two black points on costa, excurved to vein 3, then incurved; the subterminal line pale, indistinct, angled outwards at vein 7 and excurved at middle, with some dentate dark marks on its inner side; some black points on termen. Hind wing whitish, the veins and marginal areas strongly tinged with brown; underside with the costal area irrorated with brown; a discoidal point and a postmedial series of points on the veins of costal half.

Hab. U.S.A., Texas, 1 ♂ type. *Exp.* 40 millim.

472. Euxoa denticulosa.

Noctua denticulosa, Esp. Schmett. iv. pl. 183. f. 3 (1786).
Noctua cos, Hübn. Samml. Eur. Schmett., Noct. f. 720 (1827); Boisd. Ic. Lép. Eur. pl. 79. f. 2; Dup. Lép. Fr. Suppl. iii. p. 181, pl. 17. f. 2; Herr.-Schäff. Eur. Schmett., Noct. f. 420; Staud. Cat. Lep. pal. p. 146.
Agrotis tephra, Boisd. Gen. & Ind. Meth. p. 109 (1840).
Agrotis vacillans, Herr.-Schäff. Eur. Schmett., Noct. f. 25 (1845).
Agrotis nagyagensis, Frr. Neu. Beitr. Schmett. v. p. 110, pl. 448. ff. 1, 2 (1845).
Agrotis millieri, Staud. Berce, Lép. Fr. iii. p. 139 (1870).
Agrotis cycladum, Staud. Hor. Soc. Ent. Ross. vii. p. 121, pl. i. f. 9 (1870).
Agrotis aphe, Mab. Bull. Soc. Philom. (7) ix. p. 61 (1885).

Head and thorax brownish grey irrorated with dark brown; palpi blackish except at tips; abdomen grey-brown. Fore wing grey-brown irrorated with grey; the subbasal line represented by two striæ from costa; a double minutely waved antemedial line; orbicular and reniform incompletely defined by blackish, the former round; an oblique medial shade from lower angle of cell to inner margin; the postmedial line double, minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; subterminal line indistinct, pale, defined by fuscous suffusion on inner side, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing whitish, suffused with brown especially towards termen; the veins brown; cilia white, brownish at base; the underside whiter, the costal area irrorated with brown.

Ab. 1. *millieri*. Fore wing with the lines indistinct.

Ab. 2. *cycladum*. Small and tinged with rufous.—Naxos.

Hab. France, S.E., Sand Coll.; Switzerland, Valais, Zeller & Frey Colls.; Hungary, Leech Coll.; Spain; Sicily; Istria; Greece, Naxos; Tunis, Gabes, type † ♀ *aphe* in Coll. Mabille; Armenia; Asia Minor, Pontus; Syria, 1 ♂, Leech Coll.; W. Turkestan, Ferghana, Issyk Kul. *Exp.* 38 millim.

473. Euxoa fuscigera. (Plate LXIV. fig. 27.)

Agrotis fuscigerus, Grote, Can. Ent. vi. p. 155 (1874); Smith, Cat. Noct. N. Am. p. 99.

Pale grey-brown irrorated with fuscous black; palpi with the 1st and 2nd joints black at sides. Fore wing with slight ferruginous suffusion in discal and submedian folds and on disk; the lines single, black; the subbasal line bisinuate from costa to vein 1; the antemedial line excurved in and below cell and angled outwards above inner margin; the orbicular and reniform indistinct, defined by blackish scales with some black before the orbicular, and as a quadrate patch between the stigmata; the postmedial line dentate, bent outwards below costa, excurved to vein 3, then oblique; an indistinct irregularly dentate subterminal line; a terminal series of black points. Hind wing whitish, the terminal half suffused with brown especially in female; the veins brown; the underside with the costal and terminal areas irrorated with brown; a discoidal lunule and punctiform curved postmedial line.

Hab. U.S.A., Colorado, Glenwood Springs, 1 ♂, 1 ♀ type, California, Sanzalito, 1 ♂, 1 ♀, Grote Coll. *Exp.*, ♂ 36, ♀ 38 millim.

474. Euxoa lutulenta. (Plate LXIV. fig. 28.)

Agrotis lutulenta, Smith, Trans. Am. Ent. Soc. xvii. p. 50 (1890); id. Cat. Noct. N. Am. p. 98.

♀. Luteous brown; palpi blackish at sides; shoulders with a blackish line; head and thorax with the scales grey-tipped; tarsi with blackish bands; abdomen paler. Fore wing irrorated with fuscous brown; the subbasal line very indistinct; the antemedial line double, the inner line indistinct, waved, and excurved in submedian interspace and above inner margin; the medial shade prominent, diffused and somewhat irregular; claviform obsolete; orbicular and reniform very indistinct, outlined by a few dark scales, the former round, the latter well developed; the postmedial line double, dentate at the veins, bent outwards below costa, excurved to vein 4, then oblique; an irregular subterminal line angled outwards at veins 6, 4, 3, the area beyond it darker; cilia brown, with a fine ochreous line at base, the tips rather paler. Hind wing pale brownish, the veins and terminal third fuscous brown; cilia white, with a brownish line through them; underside with the costal and terminal areas irrorated with brown, a discoidal point and postmedial series of short streaks on the veins.

Hab. U.S.A., Nevada, 1 ♀, California, Sierra Nevada. *Exp.* 38 millim. This may be the female of *E. incallida*.

*475. Euxoa annulipes. (Plate LXIV. fig. 29.)

Agrotis annulipes, Smith, Trans. Am. Ent. Soc. xvii. p. 48 (1890); id. Cat. Noct. N. Am. p. 98.

♀. Ashen grey, tinged with reddish and irrorated with black; palpi darker at sides; head pale in front; tegulæ with ill-defined medial dark line; tarsi ringed with brown. Fore wing more thickly irrorated on terminal half; subbasal line indistinct, single; antemedial line double, excurved, somewhat irregular, the outer half of line distinct, the inner ill-defined on costal half; claviform obsolete; orbicular and reniform pale and very indistinct, not defined; medial shade very distinct, brown, slightly angled at middle; postmedial line distinct, double, the inner line crenulate, the outer less distinct except towards costa, bent outwards below costa, excurved to vein 4, then incurved; subterminal line pale, defined on inner side by a heavy dark shade, the area beyond it somewhat dark except towards apex, slightly angled outwards at vein 7 and excurved at middle. Hind wing white tinged with fuscous; the underside with dark irroration, especially on costal area.

Hab. U.S.A., Oregon. *Exp.* 29 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*476. Euxoa ternaria. (Plate LXIV. fig. 30.)

Carneades ternarius, Smith, Pr. U.S. Nat. Mus. xxii. p. 444 (1900).

♀. Head and thorax fuscous brown; tegulæ with traces of medial line; abdomen fuscous grey. Fore wing dark dull reddish brown obscurely irrorated with fuscous; indistinct double, waved, subbasal and antemedial lines, the former ending at submedian fold; a diffused black medial shade oblique towards costa, slightly excurved at median nervure, then erect; the postmedial line indistinct, double, minutely dentate, slightly bent outwards below costa, excurved to vein 4, then incurved; an indistinct dark subterminal line angled outwards at vein 7 and excurved at middle; a slight terminal series of black points. Hind wing pale fuscous brown, the cilia whitish; the underside white, the costal and terminal areas slightly irrorated with brown, a discoidal spot and curved postmedial line.

The subterminal line of fore wing sometimes quite obsolete.

Hab. U.S.A., Colorado, in Coll. J. B. Smith. *Exp.* 36 millim.

477. Euxoa insignata. (Plate LXIV. fig. 31.)

Agrotis insignata, Wlk. x. 330 (1856).
Agrotis pleuritica, Grote, Check-List, 1875, p. 47; Smith, Cat. Noct. N. Am. p. 97.

♂. Head and thorax rufous brown, mixed with a few white scales; patagia with an oblique band of white scales; abdomen ochreous whitish, the extremity browner, the ventral surface irrorated with rufous. Fore wing red-brown with a yellow gloss, the veins, costal and inner areas grey-brown irrorated with white; a waved whitish subbasal line from costa to vein 1 defined by dark lines; a similar antemedial line excurved in submedian interspace and strongly dentate above inner margin; claviform moderate, with a dark edge; orbicular and reniform grey, defined by black lines, the former round, the latter oblique; the postmedial line indistinct, represented by a double series of dark points on the veins, excurved from below costa to vein 3, then incurved; an indistinct white subterminal line angled outwards at vein 7 and excurved at veins 3, 4; a terminal series of small black lunules; cilia dark red-brown. Hind wing brownish white, the veins and terminal third brown; a dark terminal line; cilia white, with a brown line near base; underside with the costal and terminal areas irrorated with brown; a discoidal spot and postmedial series of points on the veins.

Hab. Canada, Nova Scotia (*Redman*), 2 ♀ type; U.S.A., Maine, New Hampshire, N. New York, Grote Coll., 1 ♂ type *pleuritica*, Michigan, 1 ♀, California (*Walsingham*), 1 ♂, S. Raphael, 3 ♂, Grote Coll. *Exp.* 42 millim.

478. Euxoa brunneigera. (Plate LXIV. fig. 32.)

Agrotis brunneigera, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 80 (1875); Smith, Cat. Noct. N. Am. p. 98.

Dull reddish brown tinged with fuscous; palpi black at sides;

tegulæ with a more or less prominent medial black line; abdomen with the anal tuft tinged with ochreous. Fore wing more or less irrorated with black; a subbasal line from costa to vein 1 angled inwards on median nervure; a sinuous antemedial black line; the claviform sometimes indistinctly outlined with black, the orbicular and reniform more or less distinctly outlined with black, the former elongate, the latter well developed; the postmedial black line minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; an indistinct dentate subterminal line slightly defined by greyish on outer side, a fine waved terminal line. Hind wing brown; underside with traces of discoidal spot and curved postmedial line.

The form from Colorado is paler and greyer brown, the markings of fore wing sometimes obsolescent, the hind wing paler towards base.

Hab. Canada, Vancouver I., 1 ♂, 1 ♀ type Grote Coll.; U.S.A., Washington Terr., 1 ♀, Louisiana, Colorado, 1 ♂, 2 ♀, Grote Coll., California (*Walsingham*), 1 ♂. *Exp.* 36–40 millim.

Larva. Dyar, Proc. Ent. Soc. Wash. iv. p. 318 (1899).

Head 2·7 millim., roughly shagreened, dark brown, a pale space above the eyes on each side of lobe. Body dull sordid brown, the skin somewhat translucent. Cervical shield brown, markings obsolete. The pale dorsal line can be made out the whole length, edged with a dark shade that is contracted at the incisures; also a dark shade at position of subdorsal line, leaving a pale space, widening at the incisures; spiracles black; setæ minute. Probably a general feeder.—H. G. D.

*479. Euxoa dreuseni.

Agrotis drewseni, Staud. Stett. ent. Zeit. 1857, p. 302; Auriv. Bihang Vet.-Akad. Handl. xv. p. 14, pl. 2. f. 7 (1890); Smith, Cat. Noct. N. Am. p. 97; Staud. Cat. Lep. pal. p. 149.

Head and thorax dirty ash-grey; tegulæ with black line; abdomen browner. Fore wing with the basal area dirty ash-grey, the rest of wing dull reddish brown; the subbasal line angled outwards below costa and inwards in cell; the antemedial line obliquely waved, inwardly defined by whitish; orbicular and reniform indistinct, grey; medial line distinct, black, excurved, somewhat incurved in cell; postmedial line bent outwards below costa, excurved and dentate to vein 4, then incurved; subterminal line represented by a series of dark points. Hind wing and underside of both wings grey, with dark terminal band.

Hab. Greenland. *Exp.* 30 millim. This species is unknown to me.

*480. Euxoa fauna.

Agrotis fauna, Morr. Proc. Bost. Soc. Nat. Hist. xviii. p. 237 (1876); Smith, Cat. Noct. N. Am. p. 98.

Dull reddish luteous slightly irrorated with black; thorax clothed with hair and scales. Fore wing with the lines indistinct, double;

the antemedial line oblique, excurved in interspaces; claviform narrow, rather elongate, defined by black; orbicular and reniform defined by black, the former irregularly elongate, the latter erect, elliptical; medial shade diffused, darkening the cell between the stigmata; postmedial line crenulate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line obsolete. Hind wing ochreous fuscous; the underside with somewhat large discoidal lunule.

Hab. U.S.A., California. *Exp.* 37 millim. This species is unknown to me.

*481. Euxoa orbicularis.

Agrotis orbicularis, Smith, Pr. U.S. Nat. Mus. x. p. 460 (1887); id. Cat. Noct. N. Am. p. 99.

♀. Luteous grey. Fore wing with the lines distinctly double, dark fuscous; the subbasal line represented by black points below median nervure; antemedial line erect, somewhat dentate; claviform indistinctly defined; orbicular and reniform pale, defined by fuscous, the former round, the latter moderate with fuscous centre; medial shade indistinct; postmedial line even, slightly crenulate, placed unusually near termen, bent outwards below costa, excurved to vein 4, then incurved; subterminal line pale, slight, sinuous; a terminal series of black points. Hind wing pale yellowish fuscous; the underside whitish, with dark irroration and discoidal lunule.

Hab. U.S.A., Nevada. *Exp.* 32 millim. This species is unknown to me.

482. Euxoa incalida. (Plate LXV. fig. 3.)

Agrotis incallida, Smith, Trans. Am. Ent. Soc. xvii. p. 50 (1890); id. Cat. Noct. N. Am. p. 98.

♂. Head and thorax brownish grey; palpi blackish at sides except at extremity; tegulæ with slight medial line; tarsi blackish with pale rings; abdomen brownish grey, the ventral surface whitish. Fore wing brownish grey, very slightly irrorated with fuscous; an indistinct double, waved, subbasal line from costa to submedian fold; an oblique waved antemedial line; a diffused waved medial line excurved at median nervure; reniform narrow, very indistinctly defined by grey; the postmedial line minutely waved, bent outwards below costa, excurved to vein 4, then strongly incurved; traces of a subterminal line angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing grey suffused with fuscous brown, the cilia white; the underside white, the costal area irrorated with brown, a black discoidal spot, curved fuscous postmedial line, and diffused terminal band.

♀. Head, thorax, and fore wing greyer, the black irroration and markings more prominent.

Hab. Canada, 1 ♂, Manitoba, Winnipeg, 1 ♀; U.S.A., California, Sierra Nevada. *Exp.* 38 millim.

483. **Euxoa mollis.** (Plate LXV. fig. 4.)

Agrotis mollis, Wlk. x. 331 (1856); Smith, Cat. Noct. N. Am. p. 100.
Agrotis fernaldi, Morr. Proc. Ac. Nat. Sci. Phil. 1875, p. 429; Grote, Ill. Ess. 53, pl. i. f. 11.

♀. Head and thorax grey-white, mixed with rufous brown; basal half of tegulæ dark brown; patagia edged with red-brown; abdomen grey, mixed with brown. Fore wing grey-white, suffused with red-brown, slightly on basal area and sometimes slightly on terminal area; a subbasal black line from costal to vein 1 angled outwards below costa and on median nervure; the antemedial line prominent, defined by grey on inner side, slightly angled outwards in and below cell and very strongly above inner margin, the claviform conjoined to it, either outlined with black or entirely filled in with black; a black fascia in cell expanding into quadrate patches before the orbicular and in end of cell; the stigmata grey, with darker line defining the central area, the orbicular triangular and open above, the reniform large; the postmedial line minutely dentate, black defined by grey on outer side, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line angled outwards at vein 6 and excurved at middle, the area beyond it paler or grey; a fine dark terminal line. Hind wing whitish-brown or brown; an indistinct discoidal lunule, postmedial line excurved at middle, and curved subterminal line.

Hab. Canada, Hudson's Bay, Albany R., St. Martin's Falls (*Barnston*), 1 ♀ type, Oldtown, 1 ♀ type *fernaldi*; U.S.A., Maine, Colorado. *Exp.* 40–42 millim.

484. **Euxoa opipara.** (Plate LXV. fig. 5.)

Agrotis opipara, Morr. Proc. Bost. Soc. N. H. xvii. p. 165 (1874); Smith, Cat. Noct. N. Am. p. 100; Staud. Cat. Lep. pal. p. 149.
Agrotis islandica, Pack. Bull. Geol. Surv. iv. p. 555, pl. —. f. 10 (1878); Auriv. Bihang Vet.-Akad. Handl. xv. p. 15, pl. i. f. 5; nec Staud.
Agrotis labradoriensis, Staud. Stett. ent. Zeit. xlii. p. 419 (1881); id. Cat. Lep. pal. p. 149.
Agrotis norwegica, Staud. Stett. ent. Zeit. 1861, p. 383; id. Cat. Lep. pal. p. 150.

Head, thorax, and abdomen grey-white, more or less tinged with fuscous brown; tegulæ with a prominent black band. Fore wing pale grey; a waved subbasal line from costa to submedian fold in which there is a blackish streak from base to the antemedial line, which is grey defined slightly by fuscous on inner side and strongly by black on outer, slightly angled outwards below costa and excurved below cell and above inner margin; claviform large, elongate, filled in with black and with a streak from it to the postmedial line: the cell and areas beyond it before the postmedial line blackish, clearly defining the grey obicular and reniform stigmata, the former being round or somewhat elliptical, the latter well-developed and with fuscous centre; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved, with fuscous suffusion on its inner side; the subterminal line formed by an obsolescent series of

small dentate marks with a brownish shade before it on costal area; a terminal series of black points and often some brownish suffusion on termen. Hind wing brownish grey; a brownish discoidal lunule and curved postmedial line; the termen tinged with brown; the underside with the costal area irrorated with brown.

Hab. Greenland; Canada, Labrador, 1 ♂, 1 ♀; U.S.A., New Hampshire, Mt. Washington 2 ♀ type, Grote Coll.; Norway in Coll. Pungeler, Dovrefeld. *Exp.* 36–40 millim.

Larva. Packard, Rept. U.S. Geol. Surv. Terr. Hayden, 1873, p. 556 (1874). Head dark. Body dark; dorsal line whitish, interrupted, subdorsal similar; finely marked with whitish.—H. G. D.

*485. Euxoa tristicula. (Plate LXIX. fig. 13.)

Agrotis tristicula, Morr. Proc. Ac. Nat. Sci. Phil. 1875, p. 429; Smith, Cat. Noct. N. Am. p. 100.

Pale, somewhat luteous grey; tegulæ with a black band. Fore wing with the lines almost obsolete; a black streak below base of cell; orbicular and reniform defined by a triangular black spot in cell before the former and a quadrate patch between them; subterminal line represented by a series of fuscous spots. Hind wing pale, the terminal area tinged with fuscous; the underside with rather ill-defined dark discoidal lunule.

Hab. U.S.A., Maine. *Exp.* 37 millim. This species is unknown to me; figured from a drawing from type in Brooklyn Inst. Arts & Sci.

486. Euxoa munis. (Plate LXV. fig. 6.)

Agrotis munis, Grote, N. Am. Ent. i. p. 38 (1879); Smith, Cat. Noct. N. Am. p. 100.
Agrotis sublatis, Grote, N. Am. Ent. i. p. 91 (1880).

Head and thorax grey, the scales tipped with brown; palpi and legs strongly tinged with brown; abdomen grey, irrorated with black and more or less tinged with ochreous towards extremity. Fore wing grey, irrorated with dark brown; the subbasal line dark, waved, extending from costa to submedian fold; the antemedial line slightly angled outwards below costa, excurved below cell and very strongly angled outwards above inner margin; the claviform usually prominent and with dark outline, the cell dark brown before and between the stigmata, which are grey defined by whitish and dark lines, the orbicular round or somewhat elliptical, the reniform large; a more or less prominent dentate medial line from cell to inner margin; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line formed by a series of small dentate marks angled outwards at veins 7 and 4; the termen slightly darker and with a series of black points. Hind wing whitish, strongly tinged with brown, especially on terminal area; the veins brown; a slight discoidal lunule; underside with the costal and terminal areas irrorated with brown;

the discoidal lunule and a curved subterminal line usually prominent.

Hab. U.S.A., Colorado (*Snow*, *Bruce*, *Cockerell*), 5 ♂, 1 ♀ type, Nevada. *Exp.* 36 millim.

487. **Euxoa dissona.** (Plate LXV. fig. 7.)

Agrotis dissona, Möschl. Wien. ent. Mon. iv. p. 365, pl. 9. f. 4 (1860); Smith, Cat. Noct. N. Am. p. 101; Staud. Cat. Lep. pal. p. 149.
Agrotis rara, Pack. Proc. Bost. Soc. N. H. xi. p. 38 (1868).

♀. Head, thorax, and abdomen grey tinged with brown, pectus with the hair blackish; legs and ventral surface of abdomen dark brown, woolly. Fore wing grey, suffused with brown and with a slight lilac tinge; the lines indistinct; the subbasal line extending from costa to vein 1; the antemedial line bent outwards in submedian fold; claviform indicated by some brown scales; orbicular and reniform very indistinct, concolorous, moderate in size, and with a quadrate brown patch between them in cell; the postmedial line minutely crenulate, angled outwards at veins 7 and 5, then oblique; the terminal line indicated by slight dark dentate marks; a terminal series of black points. Hind wing pale brown. Underside of both wings with distinct discoidal lunule and traces of curved postmedial line.

Hab. Canada, Labrador, 1 ♀ Grote Coll. *Exp.* 34 millim.

488. **Euxoa vetusta.** (Plate LXV. fig. 8.)

Mamestra vetusta, Wlk. xxxii. 662 (1865); Smith, Cat. Noct. N. Am. p. 101.
Lepipolys tetra, Wlk. xxxiii. 768 (1865).
Agrotis euroides, Grote, Proc. Ac. Nat. Sci. Phil. 1874, p. 202.
Agrotis perpura, Morr. Proc. Bost. Soc. N. H. xvii. p. 164 (1874).

Head and thorax white with a slight bluish tinge, mixed with brown scales; palpi and frons at sides with some black scales; tegulæ with medial black line, the basal half mixed with black; patagia often with some black scales on edges; the prothoracic crest at base, the tibiæ and tarsi with some rufous scales and largely mixed with black above; abdomen grey, largely mixed with fuscous and with some rufous at sides and below. Fore wing white with a slight bluish tinge, and irrorated with fuscous; the subbasal line black, excurved below costa, angled outwards at median nervure and extending to vein 1; the antemedial line double, waved; the claviform outlined with black; the orbicular and reniform concolorous, defined by black, the former somewhat oblique, elliptical, the latter large, its centre defined by fuscous, a quadrate black-brown patch in cell between them; an indistinct medial rufous line from cell to inner margin; the postmedial line strongly dentate, bent outwards below costa, excurved to vein 4, then oblique, and with traces of another line beyond it; the subterminal line represented by a very indistinct sinuous series of small dentate marks; a prominent

terminal series of small black lunules ; cilia brownish. Hind wing brown, with darker terminal line ; the underside grey, irrorated with brown, with distinct discoidal lunule and indistinct curved postmedial line.

Hab. Canada, Vancouver I. (*Hawkins, J. J. Walker*), Grote Coll., 1 ♂, 5 ♀, type and types *tetra* and *euroides* ; U.S.A., California (*Walsingham*) 1 ♀, Mendocino Co., 1 ♀, Grote Coll. *Exp.* 44 millim.

*489. Euxoa malis. (Plate LXV. fig. 9.)

Carneades malis, Smith, Pr. U.S. Nat. Mus. xxii. p. 450 (1900).

♂. Bright bluish grey ; head brown ; thorax mostly clothed with flattened hair. Fore wing with the medial area faintly tinged with reddish, the lines indistinct, except the subbasal line which is double ; antemedial line with double brown spot on costa, then single, slender, oblique, excurved in interspaces ; claviform obsolete ; orbicular large, oblique, incomplete above, with pale annulus ; reniform large, extending well below cell ; cell filled in with black before and between the stigmata ; postmedial line represented by double brown spots on costa ; subterminal line only defined by a dark shade before it on costa and the area beyond it being rather darker except at apex ; a fine brown terminal line and a yellowish line at base of cilia. Hind wing white, the veins yellowish ; a fuscous terminal line ; the underside with dark irroration, a discoidal spot and punctiform terminal line.

Hab. Canada, Manitoba, Brandon (*Hanham*). *Exp.* 29 millim. This species is unknown to me ; figured from a photograph from type in U.S. Nat. Mus.

*490. Euxoa enteridis. (Plate LXV. fig. 10.)

Carneades enteridis, Smith, Pr. U.S. Nat. Mus. xxii. p. 427 (1900).

♂. Pale greyish yellow ; tegulæ with a narrow black line edged with white scales above ; thorax with a rosy tinge on dorsum. Fore wing with the cell and terminal area except at apex fuscous, the lines fuscous brown and interrupted ; subbasal line double, interrupted in cell ; antemedial line double, the inner part indistinct, prominent at costa, then indistinct to median nervure where it is strongly dentate inwardly, then oblique and excurved in interspaces ; claviform acute, moderate, incompletely defined by fuscous ; orbicular elliptical, oblique, grey with a narrow white annulus defined by black, incompletely above ; reniform large, with fuscous-defined pale centre and pale annulus incompletely defined by black ; a medial shade angled outwards at middle ; postmedial line double, crenulate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved ; subterminal line pale, angled outwards at vein 7 and excurved at middle, defined by fuscous before it at costa and by the area beyond it being dark except at apex ; a terminal series of small dark lunules ; a fine yellowish line

at base of cilia which are intersected with grey. Hind wing white with the termen fuscous, narrowing to a point above tornus; the veins and a small discoidal lunule fuscous; the underside irrorated with fuscous.

Hab. U.S.A., Washington, Pullman (*Piper*). *Exp.* 37 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

491. **Euxoa alticola.** (Plate LXV. fig. 11.)

Agrotis alticola, Smith, Trans. Ent. Soc. xvii. p. 51 (1890); id. Cat. Noct. N. Am. p. 101.

♂. Head and thorax red-brown; tegulæ with slight dark medial line; abdomen whitish tinged with rufous. Fore wing red-brown; the antemedial line indistinct, oblique, waved; claviform obsolete; orbicular and reniform indistinct, pale, the former round, the latter moderate; postmedial line indistinct, minutely dentate, excurved from costa to vein 4, then oblique; the subterminal line defined by a slight dark shade on its inner side, the terminal area slightly darker; a fine pale line at base of cilia. Hind wing whitish suffused with brown, especially towards termen, the veins and a fine terminal line brown.

Some specimens have the markings distinct, others nearly obsolete.

Hab. U.S.A., Oregon in Coll. Schaus, Colorado, California, Sierra Nevada, 1 ♂. *Exp.* 40 millim.

*492. **Euxoa cariosa.** (Plate LXV. fig. 12.)

Carneades cariosus, Smith, Pr. U.S. Nat. Mus. xxii. p. 449 (1900).

Dull smoky brown shading to grey; palpi fuscous at sides; lower part of frons rather paler; tegulæ pale at base and with a more or less prominent medial blackish line; a yellow tuft at origin of fore wing; crests well marked. Fore wing with dark irroration, the markings rather diffused; subbasal line double, the inner bent inwards towards base in submedian fold; antemedial line double, the outer black, the inner indistinct, fuscous, interrupted below costa, oblique and excurved in interspaces; claviform moderate, incompletely defined by black; orbicular well-developed, oblique, irregularly oblong, with a whitish annulus defined by black except on subcostal nervure; reniform large, extending to below cell, with a whitish annulus defined by black at sides and tinged with yellowish on outer side, the centre fuscous irrorated with some yellow scales; median shade fuscous, well-defined, angled on median nervure; the cell dark between the stigmata; postmedial line double, the inner black, lunulate, the outer fuscous, even, bent outwards below costa, excurved to vein 4, then incurved; subterminal line pale, irregular, defined by a fuscous shade on inner edge, sometimes broken up into irregular blotches, the area beyond it rather darker except at apex; an interrupted narrow black terminal line; base of cilia yellowish. Hind wing pale yellowish tinged with fuscous, whitish at base; a

dusky discoidal lunule; cilia yellowish at base, with fuscous medial line and whitish tips; underside whitish with dark irroration, a discoidal lunule and postmedial line.

Hab. U.S.A., Washington, Pullman (*Piper*). *Exp.* ♂ 32, ♀ 34 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

493. **Euxoa infausta.** (Plate LXV. fig. 13.)

Hadena infausta, Wlk. xxxiii. 729 (1865); Smith, Cat. Noct. N. Am. p. 101.
Agrotis rufula, Smith, Proc. U.S. Nat. Mus. x. p. 461 (1887).

♀. Head and thorax brown, slightly irrorated with black; palpi blackish at sides except towards extremity; tegulæ with a black medial line; abdomen ochreous brown, the ventral surface dark brown irrorated with whitish. Fore wing pale brown, tinged with rufous and fuscous and irrorated with black; subbasal line indistinct, double, waved, from costa to vein 1; the antemedial line double, waved, oblique; claviform outlined by a few dark scales; orbicular and reniform outlined with black, the former elliptical, the latter with fuscous centre; a medial shade from lower angle of cell to inner margin; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line sinuous, angled outwards at veins 6 and 4; a terminal series of black points. Hind wing brown; the cilia white at tips; the underside whitish, the costal and terminal areas irrorated with brown; a discoidal point and curved postmedial line.

Hab. Canada, Vancouver I. (*Hawkins*) 1 ♀ type, (*J. J. Walker*) 1 ♂, 2 ♀; U.S.A., Colorado, Hall Valley, New Mexico, 7000 feet. *Exp.* 38 millim.

*494. **Euxoa megastigma.** (Plate LXV. fig. 14.)

Carneades megastigma, Smith, Pr. U.S. Nat. Mus. xxii. p. 425 (1900).

♀. Dull luteous grey. Fore wing irrorated with black, the markings indistinct; subbasal line double, represented by a few scales or obsolete; antemedial line double, erect, the inner line almost obsolete, excurved in interspaces; claviform represented by some fuscous scales; orbicular very large, pale, defined at sides only reniform large, broad, almost oblong, a dark triangular mark between the stigmata; in one specimen there is a faint indication of a medial shade; postmedial line double from costa to discal fold, minutely waved, bent outwards below costa, excurved to vein 4, then oblique; subterminal line pale, diffused, slightly defined on inner side by dark irroration; an interrupted terminal line and a fine ochreous line at base of cilia. Hind wing pale fuscous, whitish at base; the underside whitish, with an obscure discoidal spot.

Hab. Canada, Calgary (*Dod*). *Exp.* 33–38 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

495. **Euxoa nigrita.** (Plate LXV. fig. 15.)

Agrotis nigrita, Græs. Berl. ent. Zeit. 1892, p. 217; Staud. Cat. Lep. pal. p. 136.

♂. Head and thorax black-brown mixed with grey; patagia at extremity and metathorax purplish red; tarsi with pale rings; abdomen blackish and grey, dorsally tinged with purplish red, the anal tuft with ochreous. Fore wing purplish fuscous, the lines double, filled in with reddish; subbasal line waved from costa to submedian fold; antemedial line oblique, waved; claviform slightly defined by black; orbicular and reniform large, with slight reddish annuli defined by black, the former rounded, open above, the cell black between then; an indistinct oblique shade from lower angle of cell to inner margin; postmedial line lunulate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line greyish, defined on inner side by a series of small dentate black spots, angled outwards at vein 7 and excurved at middle. Hind wing fuscous brown; the underside with the costal area irrorated with fuscous, a small discoidal spot.

Hab. Amurland, Radefka, 1 ♂. *Exp.* 38 millim.

496. **Euxoa colata.** (Plate LXV. fig. 16.)

Agrotis colata, Grote, Can. Ent. xiii. p. 131 (1881); Smith, Cat. Noct. N. Am. p. 106.

♀. Head and thorax red-brown mixed with grey; palpi at sides with some black scales; pectus and abdomen grey-brown, the latter ferruginous at extremity. Fore wing purplish red-brown suffused with grey; the subbasal line represented by a few olive and black scales below the cell; the antemedial line greyish, sinuous, hardly traceable; claviform indistinct, partially outlined with black; orbicular and reniform concolorous, outlined with black except above and below and with black in the cell before and between them; faint traces of the medial line from cell to inner margin; the postmedial line very indistinct, bent outwards below costa, excurved to vein 3, then oblique; traces of an irregularly sinuous subterminal line; a series of black points on termen. Hind wing uniform dark brown; both wings with fine pale line at base of cilia; the underside more irrorated with brown; a discoidal lunule and traces of a curved postmedial line.

Hab. U.S.A., Oregon, Mt. Hood, 2 ♀ type, California, Sierra Nevada. *Exp.* 42 millim.

497. **Euxoa levisi.** (Plate LXV. fig. 17.)

Pleonectopoda lewisi, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 137, pl. 4. f. 10 (1873); Smith, Cat. Noct. N. Am. p. 106.

♂. Head and thorax red-brown, the dorsal crests of thorax chestnut: tibiæ and tarsi blackish, with ochreous rings; abdomen grey-brown, the anal tuft ochreous brown. Fore wing purplish brown; the subbasal line obsolete; the antemedial line indistinct,

excurved below cell and more strongly above inner margin; claviform obsolete; orbicular and reniform concolorous, with greyish annuli and defined by black; the former oblique, the latter moderate, the cell before and between them blackish; the postmedial line indistinct, dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line pale, minutely dentate, angled outwards slightly at veins 7 and 3. Hind wing uniform pale brown, the cilia whitish; the underside more irrorated with brown.

Hab. U.S.A., Colorado, Pt. Return, 1 ♂ type. *Exp.* 36 millim.

*498. **Euxoa noctuiformis.** (Plate LXV. fig. 18.)

Carneades noctuiformis, Smith, Pr. U.S. Nat. Mus. xxii. p. 445 (1900).

♂. Pale mouse-grey, irrorated with brown and black; head with brown transverse line; tegulæ brown at base, with black medial line and grey tips; thorax clothed with scales and hair. Fore wing with the subbasal line double, brown, defined on outer side by a brown shade below cell; antemedial line double, the two parts nearly equally prominent, bent inwards from costa to median nervure, excurved below cell and more strongly above inner margin; claviform moderate, defined by brown; orbicular large, irregularly elliptical, touching antemedial line, oblique, open above, with rather pale annulus defined by black; reniform large, broad, extending well below cell, the centre brown with yellowish line, annulus pale, defined by black; the cell dark before and between the stigmata; medial shade angled outwards at median nervure; postmedial line rather ill-defined, waved, double at costa, slightly bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct, pale, irregular, defined on inner side by a dark shade, the area beyond it rather darker except at apex; a fine terminal line and a yellowish line at base of cilia. Hind wing fuscous with a yellowish tinge, darker on outer area; a discoidal lunule; cilia whitish; the underside grey, with dark irroration.

Hab. U.S.A., E. Washington (*Piper*), California, Siskiyou (*H. Edwards*). *Exp.* 36 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

499. **Euxoa basiflava.** (Plate LXV. fig. 19.)

Agrotis basiflava, Smith, Trans. Am. Ent. Soc. xvii. p. 52 (1890); id. Cat. Noct. N. Am. p. 101.

♂. Head and thorax rufous brown; tegulæ with a dark medial line; abdomen fuscous brown, the anal tuft pale rufous. Fore wing luteous brown, the medial and terminal areas suffused with fuscous brown; the subbasal line double, sinuous from costa to submedian fold; the antemedial line double, the inner line brown, the outer black, angled outwards below costa, sinuous to vein 1, then strongly excurved; claviform outlined with black, small;

orbicular and reniform defined by black lines and with pale annuli, the former elliptical, oblique, incomplete above, the latter moderate, incomplete below, the space between them in cell blackish; the median shade oblique from lower angle of cell to inner margin; the postmedial line double, the inner crenulate, the outer more even, bent outwards below costa, excurved to vein 4, then oblique; some pale points on costa before the subterminal line, which is pale, angled outwards at vein 6, and excurved at middle, with some dentate marks on the inner side and the area beyond it dark; a terminal series of small black lunules. Hind wing fuscous brown, with dark discoidal lunule; the cilia ochreous, with brown line through them; the underside paler, irrorated with brown, the discoidal lunule prominent, a curved postmedial line and terminal series of black lunules.

Hab. Canada, Br. Columbia; U.S.A., Colorado (*Bruce*), 2 ♂, S. Park. *Exp.* 36 millim.

500. Euxoa basalis. (Plate LXV. fig. 20.)

Agrotis basalis, Grote, N. Am. Ent. i. p. 38 (1879); Smith, Cat. Noct. N. Am. p. 104.

♂. Head and thorax purplish brown, the extremity of 2nd joint of palpi, vertex of head, edges of tegulæ and patagia, and dorsal crest on thorax ferruginous; tibiæ and tarsi banded with dark brown; abdomen yellowish brown, the anal tuft, sides, and ventral surface purplish brown. Fore wing purplish chestnut, the basal area strongly suffused with grey; the subbasal and antemedial lines double, waved, the former extending to submedian fold; claviform indicated by some grey scales defined by blackish on outer side; the orbicular and reniform grey with purplish scales, defined by black lines and with whitish annuli, the cell before and between them and the area just beyond the reniform deeper chestnut-brown, the former round, the latter open below; an indistinct medial line from lower angle of cell to inner margin; the postmedial line indistinct, dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line indistinct, pale, angled outwards at vein 6 and excurved at middle, the area beyond it darker. Hind wing whitish tinged with brown, the veins, terminal area, and a fine terminal line brown; cilia white, with a brown line at base. Underside with the costal area irrorated with purplish red; a dark discoidal point.

♀. Hind wing more uniform brown.

Hab. U.S.A., Colorado (*Snow*), 1 ♂, 1 ♀ type. *Exp.* 46 millim.

*501. Euxoa solitaria.

Agrotis solitaria, Smith, Stett. ent. Zeit. xlvi. p. 223 (1885); id. Cat. Noct. N. Am. p. 104.

Rusty, somewhat yellowish red, irrorated with black; head pale; thorax carneous grey. Fore wing with the medial area more

strongly irrorated; the lines pale grey, even, not well defined; claviform obsolete; orbicular and reniform moderate, yellowish, the former round; cell slightly darker between the stigmata. Hind wing blackish; the underside fuscous grey, with dark irroration and fuscous lunule.

Hab. Canada, Labrador. *Exp.* 33 millim. This species is unknown to me.

502. Euxoa rena. (Plate LXV. fig. 21.)

Agrotis rena, Smith, Trans. Am. Ent. Soc. xvii. p. 53 (1890); id. Cat. Noct. N. Am. p. 102.

♂. Head and thorax red-brown mixed with purplish grey; palpi black at sides except at extremity; tegulæ with black medial line; tarsi with blackish bands; abdomen ochreous brown. Fore wing purplish grey irrorated with black; subbasal line indistinct, double, from costa to submedian fold and angled outwards below costa, antemedial line indistinct, double, obliquely waved; claviform represented by a few black scales; orbicular and reniform concolorous, with pale annuli and black outlines, the former round, open above, the latter ill-defined on outer side and with some fuscous in lower extremity; the cell between the stigmata black; an indistinct medial shade from lower angle of cell to inner margin; the postmedial line represented by a double series of points, bent outwards below costa, then curved; the subterminal line pale, slightly angled at veins 7 and 4, with prominent series of dentate black marks before it and slight fuscous irroration beyond it; a terminal series of black points. Hind wing whitish suffused with brown, especially on terminal area; a dark discoidal lunule; cilia white; underside with the costal and terminal areas irrorated with fuscous; the discoidal lunule and a postmedial series of short streaks on the veins prominent.

Hab. U.S.A., California, Sierra Nevada, 1 ♂, Placer Co. *Exp.* 36 millim.

503. Euxoa melanoneura. (Plate LXV. fig. 22.)

Agrotis melanoneura, Meyr. Faun. Hawai. i. p. 146 (1899).

♂. Head and base of tegulæ black and reddish brown; thorax brownish ochreous, the scales tipped with grey; pectus with reddish-brown hair; legs ochreous and black; abdomen ochreous irrorated with black, the anal tuft fulvous. Fore wing ochreous, the veins black, the interspaces streaked with reddish brown; traces of a double, waved, subbasal line from costa to submedian fold, the area between it and the double, waved, antemedial line suffused with black, this line angled outwards below costa and more strongly excurved above inner margin; orbicular and reniform with black centres and ochreous annuli defined by black, the former small, produced to a slight point on outer side, a black streak between them in cell; a double punctiform postmedial line, bent

outwards below costa, excurved to vein 4, then incurved; the subterminal line only defined by a black patch before it on costa and beyond it at middle, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pale ochreous suffused with fuscous, the veins blackish; the underside paler, with black discoidal spot, curved postmedial series of points on the veins, and terminal series of points.

Hab. Hawai, Kona (*Perkins*), 1 ♂ type. *Exp.* 38 millim.

504. Euxoa austalea. (Plate LXV. fig. 23.)

Agrotis austalea, Meyr. Faun. Hawai. i. p. 152 (1899).

Head and thorax whitish and pale brown, irrorated with black; palpi blackish at sides; frons with black bar; tegulæ with the basal half black; tibiæ and tarsi with black spots; abdomen whitish irrorated with black, the anal tuft ochreous in male. Fore wing whitish, tinged with brown and irrorated with black; the costa black, with series of pale points; a double, waved, subbasal line from costa to submedian fold; a double, waved, antemedial line angled outwards above inner margin; claviform small, defined by black; orbicular and reniform with blackish centres and whitish annuli defined by black, the former produced to a point on outer side, the lower part of cell between them black; an indistinct oblique dentate line from lower angle of cell to inner margin; postmedial line double, dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale, angled outwards at vein 7 and excurved at middle, the area beyond it darker; a terminal series of black points. Hind wing pale suffused with fuscous brown; a terminal series of black points; the underside whitish irrorated with black; a black discoidal lunule, a sinuous postmedial line with short black streaks at the veins.

Ab. 1. Head, thorax, and fore wing wholly suffused with black; abdomen and hind wing fuscous.

Hab. Hawaii, Kona (*Perkins*), 1 ♂, 3 ♀ type, Kauai, Mt. Waimea (*Perkins*), 1 ♀. *Exp.* 34–38 millim.

505. Euxoa satis. (Plate LXV. fig. 24.)

Agrotis satis, Harv. Can. Ent. viii. p. 36 (1876); Smith, Cat. Noct. N. Am. p. 102.

♂. Head and thorax reddish brown, the scales tipped with grey; palpi and sides of frons with some black scales; tegulæ with black medial line; abdomen grey, tinged with brown on dorsum and with purple at sides. Fore wing purplish brown, thickly irrorated and suffused with grey; the subbasal line double, waved, from costa to submedian fold, with a patch of rufous scales beyond it below the cell; the antemedial line double, the inner line rather faint, angled outwards below costa and in submedian fold and inwards on vein 1; claviform indistinct, defined by a few black scales;

orbicular and reniform defined by black on inner and outer sides, and with some rufous in cell before and beyond them, the former round, the latter moderate; traces of a medial line from lower angle of cell to inner margin; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 3, then oblique; the subterminal line pale, ill-defined by rufous on inner side and grey or fuscous on outer, angled outwards at vein 7 and excurved at middle; traces of a terminal series of small black lunules. Hind wing brown; cilia with brown line at base and grey at tips; the underside pale, irrorated with brown, especially towards termen; a discoidal point and curved postmedial line.

Hab. U.S.A., Montana, Nevada, California, Havilah, 2 ♂ type, Grote Coll. *Exp.* 36 millim.

506. Euxoa nostra. (Plate LXV. fig. 25.).

Agrotis nostra, Smith, Trans. Am. Ent. Soc. xvii. p. 55 (1890); id. Cat. Noct. N. Am. p. 104.

♀. Head and thorax reddish brown mixed with black and slightly with grey; tarsi banded with black; abdomen ochreous brown slightly tinged with fuscous. Fore wing reddish brown, slightly irrorated with black; the costal area irrorated with grey; a double, waved, subbasal line from costa to submedian fold; a double, waved, antemedial line somewhat angled outwards in cell and above inner margin; claviform indicated by a few black scales at its extremity; orbicular and reniform defined by black and their centres by fuscous, the former elliptical, irrorated with grey, the latter with fuscous patch in lower extremity, the cell before and between them suffused with blackish; the postmedial line double and bent outwards below costa, then indistinct, somewhat dentate, incurved in discal fold and oblique below vein 4; the subterminal line defined by the area beyond it being suffused with black and by slight dentate black marks on its inner side, angled outwards at vein 7 and excurved at middle; some pale points on costa towards apex and a terminal series of black points. Hind wing fuscous brown; the cilia grey, with a brown line through them; the underside grey irrorated with brown, a slight discoidal spot and curved postmedial line, a terminal series of black points.

Hab. U.S.A., California, Sierra Nevada, 1 ♂. *Exp.* 36 millim.

507. Euxoa reuda. (Plate LXV. fig. 26.)

Agrotis reuda, Streck. Lep. Rhop. & Het., Suppl. i. p. 6 (1899).

♂. Head and thorax reddish brown, mixed with fuscous and some grey; tegulæ with black medial line; abdomen pale red-brown. Fore wing pale red-brown, irrorated slightly with black and grey, mostly on the veins; double, waved, black subbasal and antemedial lines filled in with greyish, the former terminating at submedian fold, the latter angled inwards on median nervure and vein 1, and strongly outwards above inner margin; claviform with its upperside and extremity defined by black; orbicular and

reniform with fuscous centres and greyish annuli defined by black, the former round, some blackish suffusion in the cell between them; a prominent oblique, waved, medial line from lower angle of cell to inner margin; the postmedial line minutely dentate, bent outwards below costa, slightly incurved at discal fold, and oblique below vein 4; the terminal area suffused with black; the subterminal line indistinct, greyish, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points; a fine ochreous line at base of cilia. Hind wing whitish suffused with pale brown, the terminal area with fuscous; the cilia whitish, with a brown line through them; the underside whitish, the costal area irrorated with fuscous, the terminal area suffused with fuscous, a small dark discoidal spot.

Hab. U.S.A., Washington, W., 1 ♂. *Exp.* 36 millim.

508. Euxoa decolor. (Plate LXV. fig. 27.)

Agrotis decolor, Morr. Proc. Buff. Soc. N. H. xvii. p. 162 (1874); Smith, Cat. Noct. N. Am. p. 102.
Agrotis campestris, Grote, Can. Ent. vii. p. 188, pl. i. f. 6 (1875).

Head and thorax purplish brown, the extremity of tegulæ and the thoracic crest ochreous or bright ferruginous; head and tegulæ often mixed with black or whitish scales; palpi blackish at sides, the tegulæ with black medial line; tibiæ and tarsi black, with whitish annuli; abdomen grey, tinged with ochreous and suffused with brown, the anal tuft ochreous. Fore wing purplish brown slightly suffused with grey; some ferruginous red below the costa and base of cell; costa marked with black between the lines; the subbasal line double, black, waved, from costa to vein 1; the antemedial line double, waved, excurved below costa and cell and more strongly above inner margin; claviform outlined with black, small or well-developed; orbicular and reniform defined by black and with fine whitish annuli; the cell black before and between the stigmata, and usually some black suffusion beyond the latter; traces of a waved medial line from lower angle of cell to inner margin; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line indistinct, irregular; a terminal lunulate line. Hind wing whitish tinged with brown, the veins and terminal area brown; the underside white, with the costal and terminal areas irrorated with brown; a discoidal point and postmedial series of points on the veins.

Hab. Canada (*Norman*), 1 ♀, Nova Scotia (*Redman*), 2 ♂, 1 ♀; U.S.A., New Hampshire (*Morrison*), 1 ♂, N. York, 1 ♂, 4 ♀, type *campestris*, Grote Coll., Colorado (*Cockerell*), 1 ♂, 2 ♀. *Exp.* 34–38 millim.

Larva.

Head pale brown, dotted and streaked with darker brown. Body brown, semitransparent; skin thin. Cervical shield pale brown.

Dorsal, subdorsal, and lateral lines pale; substigmatal line whitish. Tubercles shining black; spiracles black. A general feeder. —H. G. D.

509. **Euxoa tessellata.** (Plate LXV. fig. 28.)

Agrotis tessellata, Harr. Rep. Ins. Mass. p. 324 (1841); Smith, Cat. Noct. N. Am. p. 103.
Agrotis maizi, Fitch, 2nd Rep. Ins. N. Y. p. 313 (1855); id. 9th Rep. Ins. N. Y. pp. 237–249, pl. 4. ff. 2, 3.
Agrotis perlentans, Wlk. x. 332 (1856); Smith, Cat. Noct. N. Am. p. 108.
Agrotis insignata, Wlk. x. 353 (1856).
Agrotis illata, Wlk. xi. 742 (1857).
Agrotis subsignata, Wlk. xxxii. 706 (1865).
Mamestra declarata, Wlk. xxxii. 663 (1865).
Agrotis nigricans, Riley, 1st Rep. Ins. Mo. p. 87 (1869).
Agrotis atro-purpurea, Grote, Bull. Geol. Surv. iii. p. 118 (1877).

Head and thorax brown mixed with grey, sometimes tinged with reddish brown or fuscous; palpi at sides and a band across upper part of frons black; tegulæ with a medial black line; abdomen grey tinged with fuscous brown. Fore wing pale or dark brown suffused with grey; the subbasal line double, black, waved, from costa to submedian fold; the antemedial line double, excurved in and below cell and more strongly above inner margin; claviform moderate, slightly outlined with black; orbicular and reniform defined by black, with pale annuli and slightly irrorated with grey, the cell before and between the stigmata black; an indistinct, waved, medial line from lower angle of cell to inner margin; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line pale, angled outwards at vein 7 and dentate at veins 4, 3, the area beyond it usually rather darker, with greyish patch at apex and sometimes some dentate black marks before it; a terminal series of small black lunules. Hind wing whitish tinged with brown, the veins and terminal area brown; cilia white, with a brown line at base; underside with the costal and terminal areas irrorated with brown, a discoidal lunule and postmedial series of points.

Ab. 1. *atropurpurea*. Much more tinged with fuscous; the pale subterminal line of fore wing more prominent.

Hab. Canada (*Norman*), 1 ♂, 1 ♀, Orilla (*Bush*), 1 ♀, Nova Scotia (*Redman*), 1 ♂, 1 ♀; Vancouver I. (*Hawkins, J. J. Walker*), 1 ♂, 1 ♀, type *declarata*; U.S.A., N. York, 4 ♂, 7 ♀, types *perlentans* and *insignata*=*illata*, Illinois, Colorado (*Bruce, Cockerell*), 3 ♂, 2 ♀. *Exp.*, ♂ 36, ♀ 40 millim.

Larva. Marten, Trans. Dept. Agric. Ill. xviii. App. p. 133 (1880).

Head shining black, paraclypeal pieces white. Body greyish, sometimes slightly yellowish. Dorsal line white, edged with dark; subdorsal and substigmatal lines white, separated by dark shades, a dark shade subventrally. Cervical shield black, with subdorsal white stripe. A general feeder.—H. G. D.

*510. Euxoa intrusa. (Plate LXV. fig. 29.)

Carneades intrusa, Smith, Bull. U.S. Nat. Mus. 38. p. 192 (1890); id. Pr. U.S. Nat. Mus. xxii. p. 446 (1900).

Reddish brown irrorated with black; tegulæ with black medial line. Fore wing suffused with reddish and irrorated with white on costal area, basal area, lower medial area, and subterminal area; subbasal line double, waved, from costa to submedian fold; antemedial line double, slightly waved, erect from costa to vein 1, then excurved; claviform rather small, defined by black; cell dark before and between the stigmata, which are filled in with coarse white scales; the orbicular somewhat oblique, elliptical, reniform shaded with yellow on outer side; a medial shade from cell to inner margin; postmedial line double, the inner strong, lunulate, slightly bent outwards below costa, excurved to vein 4, then incurved; subterminal line pale, waved, angled outwards at vein 7 and excurved at middle, strongly defined by a dark shade on inner side and somewhat dentate at middle; a terminal series of black lunules. Hind wing fuscous brown tinged with ochreous; the underside whitish, the costal and terminal areas irrorated with brown, a dark discoidal lunule.

Hab. U.S.A., California, Sierra Nevada. *Exp.* 30–33 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

511. Euxoa albipennis. (Plate LXV. fig. 30.)

Agrotis albipennis, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 180 (1877), ♂; Smith, Cat. Noct. N. Am. p. 103.
Agrotis nigripennis, Grote, Bull. Geol. Surv. vi. p. 159 (1880), ♀.

♂. Head and thorax fuscous black, slightly mixed with grey; pectus and legs with the hair whitish; abdomen whitish, thickly irrorated with brown, the anal tuft ochreous. Fore wing yellowish brown suffused with grey, the costal area darker; the subbasal line black, double, waved, from costa to vein 1; the antemedial line double, slightly angled outwards below costa, excurved below cell and more strongly above inner margin; the claviform represented by a few black scales; the orbicular and reniform concolorous, defined by black and with slight black annuli, the cell before and between the stigmata black, the orbicular round or somewhat elongate, the reniform large; traces of a medial line from lower angle of cell to inner margin; the postmedial line indistinct, double, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line indistinct, pale, sinuous, with dark mark before it on costa and the area beyond it darker. Hind wing white, the veins and a fine terminal line brownish, or the termen tinged with fuscous; the underside with the costal area irrorated with brown; a minute discoidal point.

♀. Very much darker, especially abdomen, the fore wing, which is suffused with purplish fuscous, and the hind wing, which is dark

fuscous brown with the cilia white, tinged with brown at base and apex.

Hab. Canada; U.S.A., Northern States E. of Rocky Mts., Massachusetts, New York, Colorado, Glenwood Springs (*Bruce*), 1 ♂, California, 2 ♂, 2 ♀, type and type *nigripennis*. *Exp.*, ♂ 36, ♀ 40 millim.

512. Euxoa verticalis. (Plate LXV. fig. 31.)

Agrotis verticalis, Grote, Bull. Brooklyn Ent. Soc. iii. p. 29 (1880).
Agrotis spectanda, Smith, Trans. Am. Ent. Soc. xvii. p. 54 (1890); id. Cat. Noct. N. Am. p. 103.

♂. Head and thorax purple-red; tibiæ and tarsi blackish with pale rings; abdomen ochreous white irrorated with fuscous, the anal tuft ochreous tinged with red. Fore wing lilacine grey, the costal area irrorated with bright rufous; a double black subbasal line from costal to submedian fold, filled in with whitish and angled inwards in cell, a similar, waved, antemedial line extending to inner margin; claviform slightly defined by black scales; orbicular and reniform large, with slight pale annuli defined by black, the former round, the cell before and between them tinged with black; a medial shade angled outwards to lower angle of cell; postmedial line double towards costa, below which it is bent outwards, then oblescent, dentate and produced to points on the veins, excurved to vein 4, then incurved; some pale points on costa on a fuscous patch before the greyish subterminal line, which is defined by the area beyond it being tinged with fuscous, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pure white, the termen slightly tinged with fuscous; the underside with the costal area irrorated with fuscous, a slight discoidal point and postmedial series on the veins.

♀. Head and tegulæ irrorated with grey, the latter and prothoracic tuft tipped with grey; fore wing with the cell filled in with rufous; hind wing with the marginal areas tinged with brown.

Hab. U.S.A., Colorado (*Snow*), 1 ♂, 1 ♀ type, California. *Exp.* 40 millim.

513. Euxoa recussa.

Noctua recussa, Hübn. Eur. Schmett., Noct. f. 630 (1827); Staud. Cat. Lep. pal. p. 149.
Agrotis telifera, Donz. Ann. Soc. Ent. Fr. vi. p. 471, pl. 18. f. 1 (1837).
Agrotis florigera, Ev. Faun. Volg. Ur. p. 189 (1844); Herr.-Schäff. Eur. Schmett., Noct. f. 148.
Agrotis transylvanica, Herr.-Schäff. Eur. Schmett., Noct. f. 547 (1845).
Agrotis decussa, Staud. Iris, ix. p. 367, pl. 4. f. 9 (1896).

Head and thorax red-brown or black-brown mixed with grey; tarsi blackish with pale rings; abdomen ochreous more or less tinged with brown, the anal tuft and ventral surface with red. Fore wing violaceous grey irrorated and suffused with rufous or dark brown; the subbasal line double, waved, from costa to submedian fold; the

antemedial line double, waved, angled outwards below costa and excurved above inner margin; claviform usually rather large, defined by black; orbicular and reniform with brown and grey centres and grey annuli, defined by the cell before and between them being black; an indistinct, waved, oblique line from lower angle of cell to inner margin; the postmedial line double, minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; subterminal line grey, angled outwards at vein 7 and excurved at middle, defined by a series of small dark dentate marks before it and the area beyond it being dark; a terminal series of small black lunules. Hind wing yellowish white, the veins and terminal area suffused with fuscous brown, more strongly in female; the underside with the costal and terminal areas irrorated with brown, a dark discoidal point.

Hab. Alps of France; Switzerland, Zeller & Frey Colls.; Germany, Silesia; Hungary; Scandinavia, Lapland, Leech Coll.; Russia, Zeller Coll., Urals; W. Siberia, Altai; W. Turkestan, Ala Tau, Issyk Kul, Alexander Mts., 1 ♂, 1 ♀; E. Turkestan, Ili; E. Siberia, Kentei, Amurland. *Exp.* 32–40 millim.

*514. Euxoa neotelis. (Plate LXV. fig. 32.)

Carneades neotelis, Smith, Pr. U.S. Nat. Mus. xxii. p. 446 (1900).

Red-brown, more or less shaded with ash-grey; frons with black transverse line; antennæ with dingy red, yellowish or grey tuft at base; tegulæ with deep brown medial line, edged with grey above; a yellowish or grey tuft at origin of fore wing; thorax clothed with hair and scales. Fore wing with the markings somewhat interrupted; subbasal line double, black, filled in with yellowish, interrupted at cell; antemedial line double, brown or black, the inner part less distinct, oblique, excurved in interspaces; claviform small or moderate, incompletely defined by black: orbicular large, elliptical, oblique, grey defined by black; reniform large, broad, extending below cell, with pale annulus defined by black, its outer part tinged with yellowish, its lower with fuscous; the cell before and between the stigmata blackish; a slight medial shade from cell to inner margin; postmedial line double, waved, blackish, bent outwards below costa, excurved to vein 4, then incurved, the outer part less distinct; subterminal line yellowish, irregular, interrupted, sometimes reduced to diffused scales, usually defined on inner side by dark spots and a more distinct shade at costa, the area beyond it somewhat darker except at apex; a terminal, somewhat lunulate, black line and a yellowish line at base of cilia. Hind wing white tinged with fuscous in male, darker and with a yellowish tinge in female, the veins, a discoidal lunule, and the terminal area darker; the underside dirty white to dusky grey with dark irroration, a discoidal spot and postmedial line.

Hab. U.S.A., Washington, Pullman (*Piper*), Colorado (*Bruce*). *Exp.* 36 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*515. Euxoa titubatis. (Plate LXVI. fig. 1.)

Carneades titubatis, Smith, Trans. Am. Ent. Soc. xxi. p. 51, pl. iv. f. 5 (1894).

Very dark red-brown with a fuscous tinge, especially on fore wings; tegulæ more ferruginous. Fore wing with the lines indistinct; the subbasal line double, filled in with pale colour; antemedial line erect, excurved above inner margin, indistinctly double, with the outer line only well-marked; claviform moderate, defined by brown; orbicular large, irregularly oblique, the centre dark defined by black, with a few ochreous scales representing the annulus; reniform large, dark, with incomplete yellowish annulus incompletely defined by black; the cell rather darker between the stigmata, traces of a medial shade; postmedial line minutely crenulate, double, the inner line distinct, the outer only traceable towards costa, bent outwards below costa, excurved to vein 4, then oblique; subterminal line very faint, sinuous; the terminal area darker; a pale line at base of cilia. Hind wing whitish, the veins and terminal area tinged with fuscous; cilia grey, with a pale line at base; the underside with dark irroration on costal area, a small discoidal lunule and ill-defined terminal band.

Hab. U.S.A., Oregon, Colorado. *Exp.* 36 millim. This species is unknown to me; figured from Prof. Smith's plate.

*516. Euxoa pallipennis. (Plate LXVI. fig. 2.)

Agrotis pallipennis, Smith, Pr. U.S. Nat. Mus. x. p. 461 (1887); id. Cat. Noct. N. Am. p. 104.

♂. Head and thorax pale brownish grey, the scales tipped with reddish brown; tegulæ with black medial line; tarsi banded with black; abdomen white slightly irrorated with brown, the anal tuft tinged with ochreous. Fore wing pale brownish grey irrorated with dark brown; the subbasal line dark, interrupted at median nervure and ending at submedian fold; the antemedian line dark, waved, interrupted; the claviform represented by a few dark scales at its extremity; the orbicular and reniform concolorous, outlined with black, the former round, the latter with a slight fuscous shade in centre, the cell between them slightly tinged with black; the postmedial line blackish, minutely dentate, strongly bent outwards below costa, excurved to vein 4, then oblique; the subterminal line dentate, the area beyond it suffused with fuscous; a terminal series of black points. Hind wing semihyaline white, a discal point, the veins and termen brownish; a terminal series of brown striæ.

Hab. Canada, Br. Columbia, north-west; U.S.A., Colorado, in Coll. Schaus & U.S. Nat. Mus. *Exp.* 38 millim.

517. Euxoa hispidula. (Plate LXVI. fig. 3.)

Agrotis hispidula, Guen. Noct. i. p. 293 (1852).

Head and thorax brown mixed with grey and black; abdomen grey-brown, the ventral surface whitish irrorated with brown, the

anal tuft fulvous. Fore wing grey-brown irrorated with black; a double, waved, subbasal line from costa to submedian fold; the antemedial line double, waved, very strongly angled outwards above inner margin; claviform rather small, defined by black; orbicular and reniform with fuscous centres and greyish annuli defined by black, the former round or elliptical and usually with black suffusion between it and reniform; the postmedial line double, dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line indistinct, dentate, angled outwards at vein 7 and excurved at middle, the area beyond it rather darker; a terminal series of black points. Hind wing whitish, the veins, costal and terminal areas tinged with brown; cilia white, with a brown line at base; the underside with the costal area white irrorated with brown.

Ab. 1. ♀ wholly suffused with fuscous.

Hab. Falkland Is., Darwin Harbour (*Dale*), 4 ♂, 1 ♀; Patagonia, Magellan, Oazy Harbour (*Cunningham*), 1 ♂; Chili (*Edmonds*), 2 ♂, 1 ♀. *Exp.* 36–40 millim.

518. Euxoa bilitura. (Plate LXVI. fig. 4.)

Agrotis bilitura, Guen. Noct. i. p. 285 (1852).
Spælotis cineraria, Blanch. Gay's Chile, vii. p. 74 (1852).
Agrotis deprivata, Wlk. xi. 739 (1857).

Head and thorax pale brown; legs irrorated with black; abdomen ochreous, the anal tuft tinged with fulvous. Fore wing pale brown, slightly irrorated with white and with a slight fuscous tinge; the markings indistinct; the subbasal line double, waved from costa to vein 1; the antemedial line double, angled outwards below costa, then waved; claviform absent; the orbicular and reniform small, slightly defined by black, the former round, with a slight black streak before it and a prominent one between it and reniform; the postmedial line double, dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line hardly traceable, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing semihyaline white.

Hab. Chili, Coquimbo (*J. J. Walker*), 1 ♂, 2 ♀, Talcahuano (*J. J. Walker*), 1 ♂, Valdivia, 1 ♂ type *deprivata*, (*Edmonds*) 2 ♀ *Exp.* 40–46 millim.

519. Euxoa ochrogaster. (Plate LXVI. fig. 5.)

Noctua ochrogaster, Guen. Noct. i. p. 327 (1852); Smith, Cat. Noct. N. Am. p. 104.
Agrotis cinereomacula, Morr. Proc. Bost. Soc. N. H. xvii. p. 164 (1874).
Agrotis gularis, Grote, Proc. Ac. Nat. Sci. 1875, p. 424.
Agrotis turris, Grote, Can. Ent. vii. p. 226 (1875).

Deep purplish red-brown to pale ochreous brown; head and thorax with some of the scales tipped with grey: tegulæ with a darker medial line; pectus brown and grey; legs blackish above; abdomen

blackish above, the anal tuft and ventral surface ochreous. Fore wing with indistinct, waved, double subbasal and antemedial lines, the former from costa to vein 1, the latter more strongly excurved above vein 1; claviform usually distinct, outlined with black and sometimes filled in with black; the orbicular and reniform with fuscous centres, grey annuli and black outline, the former oblique, elliptical or round, sometimes with grey centre, the latter large, the cell before and between them more or less strongly suffused with black; an indistinct waved medial line from lower angle of cell to inner margin; the postmedial line minutely waved, bent outwards below costa, excurved to vein 4, then oblique, the veins just beyond it with slight dark streaks; the subterminal line pale, angled outwards at vein 7 and excurved at middle, often with slight dentate black marks on its inner side, the area beyond it tinged with fuscous; a terminal series of small black lunules. Hind wing brown, somewhat whitish towards base; cilia whitish, with a brown line at base; underside whitish, the costal and terminal areas suffused and irrorated with brown; a dark discoidal lunule.

Hab. Canada (*Norman*), 1 ♀, Nova Scotia (*Redman*), 1 ♀; U.S.A., Grote Coll., 1 ♂ type *gularis*, 1 ♀ type *turris*, N. & E. States, Michigan, 1 ♀, Missouri, Colorado. *Exp.* 42–46 millim.

*520. Euxoa compressipennis. (Plate LXVI. fig. 6.)

Carneades compressipennis, Smith, Pr. U.S. Nat. Mus. xxii. p. 429 (1900).

Dull dusky red-brown with darker irroration; frons brown; tegulæ with medial black line, brown at base; thorax with some of the hair tipped with grey. Fore wing with coarse dark irroration, the markings interrupted, the cell filled in with dark brown, costa irrorated with grey at base; subbasal line double, black, interrupted and filled in with grey; antemedial line double, black, the inner line less distinct and the space between the lines pale, angled inwards on median nervure, then oblique and excurved in interspaces, connected with subbasal line by a dark streak below cell; median nervure with pale irroration; claviform moderate, defined by black; orbicular irregular, subquadrate, oblique, with pale-irrorated centre and pale annulus; reniform moderate, with pale-irrorated centre and ochreous annulus; postmedial line double, filled in with reddish, the inner line lunulate, the outer more even, bent outwards below costa, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line yellowish, slightly angled outwards at vein 7 and excurved at middle, defined on inner side by a dark shade, diffused outwardly; a terminal series of small dark lunules and a fine yellowish line at base of cilia. Hind wing pale fuscous, the cilia with a yellowish line at base; the underside grey with dark irroration, a faint discoidal spot and traces of a postmedial line.

Hab. U.S.A., California, Yosemite Valley (*Dyar*). *Exp.* 33 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

521. Euxoa obeliscoides. (Plate LXVI. fig. 7.)

Agrotis obeliscoides, Guen. Noct. i. p. 293 (1852); Smith, Cat. Noct. N. Am. p. 105.
Agrotis sexatilis, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 100 (1873).

Head and thorax blackish brown; palpi pale at tips, tegulæ with blackish medial line and the extremities greyish, the crests on vertex of thorax pale rufous; legs mixed with black; abdomen yellowish brown, the sides and extremity tinged with rufous, the ventral surface pale. Fore wing purplish red-brown; the costal area broadly white and the inner area broadly fuscous to the postmedial line; a black streak below base of cell; the subbasal line double, interrupted, from costa to vein 1; a double, waved, antemedial line angled outwards below costa; the claviform large and strongly defined by black; the orbicular and reniform large, white with slight rufous tinge in centre, defined by black, the former oblique, elliptical; the cell before and between the stigmata and the area between the reniform and postmedial line blackish; the postmedial line prominent, black, dentate, with traces of another line beyond it, bent outwards below costa, excurved to vein 4, then incurved; an indistinct pale subterminal line angled outwards at vein 7 and bidentate at middle, the area beyond it rather darker; a terminal series of black points. Hind wing whitish tinged with brown; the veins and terminal area brown; cilia whitish, with brown line at base; the underside with the costal and terminal areas irrorated with brown, a discoidal spot.

Hab. U.S.A., types ♂ *obeliscoides* and *sexatilis*, Massachusetts, N. York, Georgia, Colorado (*Cockerell*), 1 ♂, 1 ♀, New Mexico, Arizona (*Prescott*), 1 ♀. *Exp.* 36–40 millim.

522. Euxoa excellens. (Plate LXVI. fig. 8.)

Agrotis excellens, Grote, Trans. Am. Ent. Soc. v. p. 115 (1875).
Agrotis perexcellens, Grote, Bull. Geol. Surv. vi. p. 156 (1880); Smith, Cat. Noct. N. Am. p. 106.
Agrotis infelix, Smith, Trans. Am. Ent. Soc. xvii. p. 57 (1890).

♂. Head and thorax purplish red-brown mixed with white; palpi and sides of frons with some black hair; tegulæ yellowish white in front, with black medial line and tipped with white; patagia edged with black; dorsal crests largely whitish; legs black and brown, with whitish rings on the tibiæ and tarsi; abdomen grey-brown, the sides, anal tuft, and ventral surface tinged with purplish red. Fore wing dark purplish brown, the costal area whitish to the postmedial line, extending to median nervure near base, the inner area pale rufous; an ill-defined short blackish fascia below base of cell; the subbasal line represented by an oblique yellowish line below the cell, joined by a slight streak from base; the antemedial line double, filled in with whitish, excurved in and below cell and obsolete on costal and inner areas; the claviform large, defined by black and often filled in with blackish, a pale streak from above its extremity to the postmedial line; the orbicular and reniform whitish, centred with

brownish and defined by black, the former oblique, the latter large ; the cell before and between the stigmata and between the reniform and postmedial line tinged with black ; the postmedial line strongly dentate, bent outwards below costa, excurved to vein 3, then incurved, the area beyond it pale rufous ; some pale points on costa towards apex and a grey patch at apex ; the subterminal line white, prominent, bidentate at middle, and with dentate black marks before its medial point ; a terminal series of small black lunules. Hind wing whitish tinged with brown ; the veins, discoidal lunule, and terminal area brown ; cilia white, with a brown line near base ; the underside with the costal area strongly irrorated with brown ; the discoidal lunule prominent ; a terminal series of small black lunules.

♀. Fore wing with the pale areas much whiter.

Hab. Canada, Vancouver I., 2 ♂, 1 ♀ type ; U.S.A., Colorado (*Snow*), 1 ♀, Glenwood Springs, California. *Exp.*, ♂ 44, ♀ 46 millim.

Larva. Dyar, Proc. Ent. Soc. Wash. iv. p. 318 (1899).

Head 3 millim., reddish brown, shining, faintly marked by pale reticulations. Cervical shield shining brown, somewhat translucent. Dorsal space broadly pale, nearly obscuring the pale dorsal line, this pale area widening only slightly at the incisures, and reaching almost to the faintly traceable narrow, pale, subdorsal line. Stigmatal line faintly shadowed, whitish, concolorous with the pale subventral area ; setæ minute. Probably a general feeder.—H. G. D.

523. Euxoa tritici.

Noctua tritici, Linn. Faun. Suec. p. 320 (1761) ; Boisd. Icones, pl. 77. ff. 2, 3 ; Steph. Ill. Brit. Ent., Haust. ii. p. 121 ; Herr.-Schäff. Eur. Schmett., Noct. ff. 527–8 & 529–30 ; Staud. Cat. Lep. pal. p. 150.
Noctua aquilina, Schiff. Wien. Verz. p. 80 (1776) ; Hübn. Samml. Eur. Schmett., Noct. ff. 535–6 ; Herr.-Schäff. Eur. Schmett., Noct. ff. 533, 540.
Noctua nigrofusca, Esp. Schmett. iv. pl. 127. f. 6 (1786).
Noctua pratincola, Bork. Eur. Schmett., Noct. iv. p. 553 (1792) ; Hübn. Samml. Eur. Schmett., Noct. f. 567.
Noctua domestica, Fabr. Ent. Syst. iii. 2, p. 23 (1793).
Noctua eruta, Hübn. Samml. Eur. Schmett., Noct. f. 623 (1827).
Noctua fictilis, Hübn. Samml. Eur. Schmett., Noct. f. 479 (1827).
Agrotis segnilis, Boisd. Ind. Meth. p. 110 (1829).
Agrotis seliginis, Dup. Lép. Fr. Suppl. iii. p. 211, pl. 19. f. 6 (1836).
Agrotis subuletorum, Boisd. Gen. et Ind. Meth. p. 109 (1840) ; Herr.-Schäff Eur. Schmett., Noct. f. 19 ; Staud. Cat. Lep. pal. p. 150.
Agrotis squalida, Ev. Bull. Mosc. iii. p. 548 (1842) ; Herr.-Schäff. Eur. Schmett., Noct. f. 494 (*nec* Boisd.).
Agrotis detorta, Ev. Bull. Mosc. ii. p. 628 (1851).
Agrotis siliginis, Guen. Noct. i. p. 287 (1852).
Agrotis fœda, Led. Verh. z.-b. Ges. Wien, 1855, p. 107, pl. i. f. 6 ; Ersch. Fedtsch. Reis. pl. 3. f. 38.
Agrotis nigrina, Staud. Stett. ent. Zeit. 1867, p. 106.
Agrotis varia, Alph. Rom. Mém. v. p. 138, pl. 7. f. 1 (1889).
Agrotis obscurior, Staud. Rom. Mém. vi. p. 420 (1892).
Agrotis distincta, Staud. Iris, v. p. 358 (1892).

Head and thorax ochreous to dark brown, largely suffused with black and irrorated with white ; palpi black at sides except at

extremity ; tarsi blackish, with pale rings ; abdomen brown, dorsally tinged with fuscous, greyish at base. Fore wing brown, more or less suffused with fuscous and irrorated with white on costal and inner areas ; the median nervure streaked with white ; the subbasal line white, defined by black on inner side, acutely angled outwards in cell, then oblique to submedian fold ; the antemedial line black, defined by whitish on inner side, waved and angled outwards below costa and above inner margin ; claviform large, defined by black, with an ochreous or whitish streak from it above submedian fold to postmedial line ; orbicular and reniform with brownish centres and white annuli defined by black, the former round, the cell usually suffused or filled in with black ; the postmedial line minutely dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then oblique, defined by whitish on outer side and with whitish suffusion between it and subterminal line except towards costa where it is bent outwards to apex, on veins 3, 4 produced to teeth defining the black-streaked veins ; some pale points on costa towards apex ; the subterminal line indistinct, pale, minutely waved, angled outwards at vein 7 and excurved at middle, and with some dentate black marks before it at middle ; a terminal series of black points. Hind wing white, the veins and marginal areas broadly suffused with brown ; the underside with the costal and terminal areas irrorated with brown, a discoidal point.

Ab. 1. *aquilina*. Larger, browner ; fore wing with the whitish replaced by ochreous.

Ab. 2. *obelisca*, auct. Brit. *nec* Schiff. Purplish or reddish brown, without dentate black marks before the subterminal line.

Ab. 3. *eruta*. Fuscous brown irrorated with grey, the markings less distinct.

Ab. 4. *seliginis*. Grey-brown irrorated with grey, the markings less distinct ; hind wing white, with the marginal areas slightly tinged with brown.

Ab. 5. *obscurior*. Similar to *eruta*, but blacker.—Ussuri.

Ab. 6. *distincta*. Large ; markings prominent, bright ; hind wing white ; antennæ thick.—S. Russia ; Pontus.

Ab. 7. *detorta*. Markings prominent.—S.E. Siberia ; Mongolia.

Ab. 8. *varia*. The costal fascia, veins, and stigmata prominently white.—C. Asia ; Mongolia ; Siberia.

Hab. Britain, Scotland, England, Ireland, Leech Coll. ; France, Sand Coll. ; Germany, Zeller & Mutzell Colls. ; Austria ; Hungary ; Switzerland, Frey Coll. ; Russia, Livonia, Sarepta (*Christoph*), 1 ♂, 2 ♀ ; Armenia ; Asia Minor, Pontus ; W. Siberia, Altai ; W. Turkestan, Sarawschan ; Issyk-kul, 1 ♀, Mongolia, Uliassutai ; E. Turkestan, Ili ; E. Siberia, Ussuri, Amurland. *Exp.* 26–42 millim.

Larva. Meyr. Brit. Lep. p. 96 ; Barrett, Lep. Brit. iii. p. 341, pl. 131 & pl. 132. f. 1.

Dull brownish ; dorsal line pale ; subdorsal line fuscous, pale-edged below ; lateral and spiracular lines dark greenish fuscous ; head brownish, with dark markings. Food-plants : *Plantago*, *Stellaria*, *Brassica*, etc. 5–6.

*524. Euxoa pindar. (Plate LXVI. fig. 9.)

Carneades pindar, Smith, Pr. U.S. Nat. Mus. xxii. p. 451 (1900).

♂. Brownish grey; palpi blackish at sides; head fawn-grey; tegulæ fawn at base, with black medial line and brownish tips; thorax mostly clothed with flattened hair, the crests indistinct. Fore wing with the costal area rather paler; a black streak below base of cell diffused at extremity; subbasal line represented by two points on costa and a pale striga across streak below cell; antemedial line double, very indistinct, erect from costa to vein 1, strongly excurved above inner margin; claviform well developed, defined by black; orbicular large, oblique, oblong, defined by black, open above; reniform well-developed, defined by black; the cell black before and between the stigmata; postmedial line double, the inner part lunulate, the outer even, indistinct, slightly bent outwards below costa, excurved to vein 4, then oblique; subterminal line only defined by the area beyond it being fuscous brown except at apex, and by a shade before it which is most prominent at costa, dentate at middle; a terminal series of small black lunules emitting streaks to the subterminal line. Hind wing whitish, slightly tinged with ochreous; the termen narrowly suffused with fuscous; the underside with dark irroration and discoidal spot.

Hab. U.S.A., Utah, Bluff (*Mrs. Peabody*). *Exp.* 34–36 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

525. Euxoa idahoensis. (Plate LXVI. fig. 10.)

Agrotis idahoensis, Grote, Bull. Geol. Surv. iv. p. 171 (1878); Smith, Cat. Noct. N. Am. p. 105.

♂. Head and thorax dark red-brown, the scales tipped with grey; tegulæ with black medial line; abdomen grey, dorsally tinged with ochreous, ventrally irrorated with brown. Fore wing dark reddish brown, slightly irrorated with white; the costal area with a broad whitish stripe extending to beyond middle; an ill-defined black streak below base of cell; the subbasal and antemedial lines obsolete; the claviform large, defined by black; the orbicular and reniform whitish, defined by black, the former oblique, confluent with the costal fascia; the cell before lower part of orbicular and between the stigmata blackish; postmedial line very indistinct, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line indistinct, slightly angled outwards at vein 7. Hind wing pale brown; the underside with slight discoidal mark, the costal and terminal areas slightly irrorated with brown.

Hab. U.S.A., Idaho, 1 ♂ type, Grote Coll., Colorado, Nevada, 1 ♀. *Exp.* 40 millim.

*526. Euxoa factoris.

Carneades factoris, Smith, Pr. U.S. Nat. Mus. xxii. p. 456 (1900).

♀. Fawn-grey, more or less shaded with brown; tegulæ with

black medial line diffused towards base; thorax clothed with hair and scales. Fore wing with the costa shaded with grey; the medial area rather darker red-brown; the lines somewhat interrupted; subbasal line represented by two black spots on costa and a pale striga intersecting the black streak below base of cell, diffused below; antemedial line double, the outer black, obsolete towards costa, the inner brown, the included space grey, incurved from costa to median nervure, excurved below cell and more strongly above inner margin; median nervure streaked with grey; claviform rather incompletely defined by black, filled in with brownish, rather short and broad; orbicular irregular, oblique, oblong, open above, with pale annulus; reniform moderate, rather narrow, with grey centre and annulus defined by black; the cell blackish before and between the stigmata; postmedial line double, the inner line blackish, lunulate, the outer even, indistinct, the included space rufous, bent outwards below costa, excurved to vein 4, then incurved; subterminal line fine, yellowish, more or less interrupted and irregular, defined on inner side by blackish spots; a pale apical patch; a fine dark terminal line and yellowish line at base of cilia. Hind wing dusky yellowish, with dark discoidal lunule and pale cilia with yellowish line at base; the underside whitish to fuscous grey, with dark irroration and sometimes a discoidal lunule and postmedial line.

Hab. U.S.A., Colorado, Glenwood Springs (*Barnes*). *Exp.* 33–40 millim. This species is unknown to me.

*527. Euxoa fœminalis. (Plate LXVI. fig. 11.)

Carneades fœminalis, Smith, Pr. U.S. Nat. Mus. xxii. p. 454 (1900).

♀. Head and thorax fuscous brown strongly mixed with grey; palpi blackish at sides except at tips; abdomen brownish grey. Fore wing fuscous brown irrorated with grey; the costal area white, irrorated with fuscous to the postmedial line, then irrorated with white, expanding to median nervure from base to antemedial line; the subbasal and antemedial lines represented by blackish marks on costa, an obscure black dash below base of cell; claviform slightly defined by black; orbicular and reniform white, irrorated with fuscous and defined by black, the former elongate, oblique and open above, the latter somewhat angled inwards on median nervure, the cell before and between them blackish; the postmedial line indistinct, dentate, bent outwards below costa, angled inwards in discal fold and oblique below vein 4; some white points on costa towards apex; the subterminal line represented by an indistinct series of whitish points defined by fuscous on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pale brown; the cilia white, with pale brown line near base; the underside white, the costal and terminal areas irrorated with brown, a slight discoidal lunule, and traces of a curved postmedial line.

Hab. U.S.A., Colorado, Garfield Co. (*Bruce*), in Coll. J. B. Smith. *Exp.* 34 millim.

528. Euxoa furtiva. (Plate LXVI. fig. 12.)

Agrotis furtivus, Smith, Trans. Am. Ent. Soc. xvii. p. 56 (1890); id. Cat. Noct. N. Am. p. 105.

Head and thorax grey-brown mixed with grey or reddish brown; tegulæ with a black medial line; abdomen grey, strongly irrorated with brown, the extremity tinged with ochreous. Fore wing grey-brown or red-brown; the costal area whitish to the postmedial line in the rufous specimens slightly tinged with rufous, the pale colour extending to median nervure at base; an ill-defined black fascia below base of cell; the subbasal line obsolete, the antemedial indistinct, angled outwards in cell and excurved below it: the claviform clearly defined by black; the orbicular and reniform grey, tinged with brown in the rufous specimens, defined by black, the former oblique V-shaped, open above, the latter well-developed, entire; medial line obsolete; postmedial line indistinct, very minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line excurved at vein 7 and middle, with a dark shade before it and series of small dentate black marks; a terminal series of black points. Hind wing pale brown; the cilia white, with a brown line at base; the underside with the costal and terminal areas irrorated with brown; a discoidal lunule and indistinct curved postmedial line.

Hab. U.S.A., Colorado, (*Cockerell*) 1 ♂, (*Bruce*) 2 ♀, California.
Exp. 40 millim.

529. Euxoa vanidica. (Plate LXVI. fig. 13.)

Carneades vanidicus, Smith, Pr. U.S. Nat. Mus. xxii. p. 453 (1900).

♂. Head and thorax grey-brown mixed with fuscous; frons with lateral black bars; tegulæ ochreous brown at base, irrorated with black, the tips dark; patagia blackish, with patch of white scales near base; tarsi banded with black; abdomen grey-white. Fore wing ochreous, irrorated with brown and tinged with rufous in parts; a black streak below base of cell; the subbasal and antemedial lines represented by double black striæ from costa, and the latter by an indistinct excurved line between cell and vein 1; claviform rather small, defined by black; orbicular and reniform with brownish centres and whitish annuli defined by black, the former small, oblique, the cell before and between them and the area from reniform to postmedial line suffused with red-brown; the postmedial line represented by two dark striæ from costa, then by minute black streaks on the veins, bent outwards below costa, excurved to vein 4, then incurved; a reddish-brown patch and some pale points on costa towards apex; the subterminal line defined by slight dark dentate marks before it at middle, and the area beyond it dark brown, bent outwards to apex, angled inwards in discal and submedian folds and excurved at middle; a terminal series of black points. Hind wing white, the inner margin and termen tinged with brown; a dark terminal line; the underside

with the costal area irrorated with fuscous, a slight discoidal point.

Hab. U.S.A., Washington, Pullman, California, 1 ♂, Arizona, Phœnix. *Exp.* 38 millim.

530. Euxoa basigramma. (Plate LXVI. fig. 14.)

Agrotis basigramma, Staud. Berl. ent. Zeit. 1870, p. 111; id. Cat. Lep. pal. p. 150.

Head and thorax grey, more or less strongly tinged with purplish brown; tegulæ with black medial line; tarsi blackish, with pale rings; abdomen brownish white. Fore wing grey, more or less strongly suffused with red-brown; a black streak below the cell to the claviform, which is small and outlined with black; orbicular and reniform defined by black, the former oblique, elliptical, open above, the cell before and between them more or less strongly suffused with black; an indistinct grey subterminal line slightly defined on each side by fuscous, angled outwards at vein 7 and excurved at middle; a terminal series of slight points. Hind wing white, the marginal areas tinged with brown; the underside with the costal area irrorated with brown.

Hab. S. Russia, Sarepta, 3 ♂, 1 ♀; W. Turkestan, Fergana, Issyk-kul, Tarbagatai Mts.; E. Turkestan, Thian Shan Mts. *Exp.* 28–34 millim.

*531. Euxoa infusa.

Carneades infusa, Smith, Can. Ent. xxxiv. p. 30 (1902).

♂. Fuscous brown, sometimes with a violaceous tinge; head and tegulæ rather paler, the latter with fine obscure black medial line. Fore wing with the costa somewhat paler, yellowish at base; a curved black streak below base of cell; antemedial line represented by a black spot in cell, a striga below it, and some scales above inner margin; claviform narrow, defined by black; orbicular irregular, with pale centre defined by black; reniform large, broad, with pale centre defined by black; the cell before and between the stigmata blackish; postmedial line represented by a slight difference in tint between medial and postmedial areas beyond the cell only; subterminal line barely traceable. Hind wing whitish, the terminal area suffused with fuscous; the underside with dark irroration.

Hab. Canada, Manitoba, Cartwright; U.S.A., Wyoming, Black Hills. *Exp.* 30 millim. This species is unknown to me.

532. Euxoa vitta.

Noctua vitta, Esp. Schmett. iv. pl. 143. f. 6 (1786); Hübn. Eur. Schmett., Noct. ff. 533–4; Godt. Lép. Fr. v. pl. 64. ff. 4, 5; Staud. Cat. Lep. pal. p. 150.

Head and thorax dark brown mixed with grey, sometimes rufous; palpi blackish at sides; tegulæ with black medial line; tibiæ and

tarsi blackish, with pale rings; abdomen greyish or ochreous, dorsally tinged with fuscous, the anal tuft with rufous. Fore wing purplish grey irrorated with fuscous, the disk suffused with dark or reddish brown; the costal area broadly grey-white to postmedial line, at base extending to median nervure; a curved black subbasal line from costa to submedian fold, defined by whitish on outer side, and with a black streak below the cell from it to the double, waved, antemedial line, which is angled outwards below costa; claviform moderate, defined by black; orbicular and reniform grey-white, irrorated with brown at centre and defined by black, the former rounded or oblique elliptical, the cell before and between them suffused with black; median nervure streaked with white; the postmedial line minutely waved, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line whitish, angled outwards at vein 7 and dentate at veins 4 and 3, defined on inner side by a dark patch at costa with some pale points on it, and at middle by dentate dark marks, the area beyond it tinged with fuscous except at apex; a terminal series of black points. Hind wing white, the veins and termen slightly tinged with fuscous brown, broadly in female; the underside with the costal area irrorated with brown.

Hab. Switzerland, Valais, Frey Coll.; Lr. Austria; Carinthia; Hungary, Zeller & Mutzell Colls. *Exp.* 32–40 millim.

533. Euxoa islandica. (Plate LXVI. fig. 15.)

Agrotis islandica, Staud. Stett. ent. Zeit. 1857, p. 232; Smith, Cat. Noct. N. Am. p. 106; Staud. Cat. Lep. pal. p. 149.
Agrotis rossica, Staud. Stett. ent. Zeit. 1881, p. 419; Alph. Rom. Mém. v. p. 138, pl. 7. f. 3.
Agrotis karschi, Græser, Berl. ent. Zeit. 1889, p. 253.
Agrotis nigra, Staud. Iris, ix. p. 251 (1896).

Head and thorax dark brown mixed with grey-brown, the head and part of tegulæ in front of the black medial line often whitish; abdomen grey-brown, the anal tuft pale fulvous. Fore wing grey-brown, often much suffused with fuscous brown; an irregular blackish streak below basal part of cell; the subbasal line double, obsolescent, interrupted, extending from costa to vein 1; the antemedial line double, angled inwards on median nervure, then oblique and excurved below cell and vein 1; the claviform well-developed or large, defined by black; the orbicular and reniform grey-brown or whitish, the former round or somewhat elliptical, the latter moderate, the cell before and between the stigmata and the area just beyond the reniform blackish; the postmedial line bent outwards below costa, incurved in discal fold, excurved beyond lower angle of cell, then oblique; the subterminal line indistinct, angled slightly outwards at vein 7 and excurved at middle, with a series of dentate marks on its inner side; a terminal series of black points. Hind wing white tinged with brown, the veins, a slight discoidal mark, the costal and terminal areas brown; the underside with the

costal area strongly irrorated with brown and with a distinct discoidal point.

Hab. Iceland, 1 ♂, 6 ♀, Grote & Zeller Colls.; Russia, Livonia, Urals; Mongolia, Uliassutai Mts., 2 ♂, 2 ♀, Changai Mts.; N. Siberia, Shigansk, 1 ♂; Amurland; Kashmir, Kuijar (*McArthur*), 1 ♂, Nubra (*McArthur*), 1 ♂, 1 ♀. *Exp.* 36–38 millim.

534. Euxoa henrietta. (Plate LXVI. fig. 16.)

Carneades henrietta, Smith, Pr. U.S. Nat. Mus. xxii. p. 452 (1900).
Agrotis obelisca, Druce, Biol. Centr.-Am., Het. i. p. 283, part (nec Schiff.).

Head and thorax pale ochreous brown mixed with dark brown; frons with lateral black bars; tegulæ whitish at base and with black medial line; abdomen ochreous white, with pale brownish dorsal bands. Fore wing brownish grey; the costal area pale, extending into cell at base; the cell and area beyond it to postmedial line and below it to vein 1 suffused with brown; a blackish patch below base of cell; the subbasal and antemedial lines represented by black points on costa, the latter excurved below cell and very strongly above inner margin, defined by grey on inner side; claviform moderate, defined by black; orbicular and reniform with brownish centres and whitish annuli defined by black, the former oblique, elliptical, open above, the cell before and between them suffused with black; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique, the area beyond it grey to the subterminal line, which arises from termen just below apex, is angled inwards in discal fold, excurved at middle, then incurved; the interspaces of terminal area streaked with black. Hind wing white, very slightly tinged with brown; the underside with the costal area irrorated with brown, a slight discoidal bar and dark terminal line.

Hab. U.S.A., California, Mendocino, 1 ♂, Alameda Co., St. Cruz, Arizona, Senator; Mexico, Las Vegas (*Hoege*), 1 ♂, 1 ♀; Costa Rica, Irazu (*Rogers*), 1 ♀, Godman-Salvin Coll. *Exp.* 36 millim.

Larva. Dyar, Pr. U.S. Nat. Mus. xxii. p. 453 (1900).

Head bilobed, broad; clypeus broadly triangular, rather high, pale brown, speckled with darker over the sides and at the top of each lobe; labrum pale, ocelli in a brown patch; width 3·5 mm. Body robust; feet normal, short; tubercle iv. of somites 9 and 10 at the upper corner of spiracle. Skin thin, translucent whitish, the dorsum faintly shaded with reddish. Cervical shield distinct, brown, with brown impressed strigæ, cut by three white bands; anal plate obscure, brown-dotted; spiracles black, tubercles brown, obscure. Said to feed on the roots of various plants.—H. G. D.

535. Euxoa atrifera. (Plate LXVI. fig. 17.)

Agrotis atrifera, Grote, Bull. Geol. Surv. iv. p. 173 (1878); Smith, Cat. Noct. N. Am. p. 107.

Head and thorax pale reddish brown, the scales tipped with grey;

palpi with some black at sides; tegulæ with black medial line; tibiæ and tarsi banded with black; abdomen pale grey-brown. Fore wing pale grey-brown; a black fascia below basal part of cell; the subbasal line represented by two points on costa; the antemedial line indistinct, double, angled outwards in and below cell and above inner margin; the claviform slightly defined by black; the orbicular and reniform concolorous, defined by black, the former open above, the latter moderate, the cell before and between the stigmata black; the postmedial line very indistinct, minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line very indistinct, with fuscous mark beyond it at costa, angled outwards at vein 7, excurved at middle and with slight dentate black marks on its inner side; a terminal series of black points. Hind wing white, the veins and terminal area tinged with brown; cilia white, with a brown line through them; the underside with the costal and terminal areas irrorated with brown; a discoidal point and a terminal series.

Hab. U.S.A., Maine (*Fernald*), 1 ♂, Colorado, Glenwood Springs, California, Sierra Nevada, 2 ♀ type, Grote Coll. *Exp.* 40 millim.

*536. Euxoa vestermanni. (Plate LXIX. fig. 20.)

Agrotis westermanni, Staud. Stett. ent. Zeit. 1857, p. 303; Auriv. Bih. Svensk. Vet.-Akad. Handl. xv. p. 14, pl. 2. f. 8; Smith, Bull. U.S. Nat. Mus. 38. p. 198; id. Cat. Noct. N. Am. p. 105; Staud. Cat. Lep. pal. p. 142.

♀. Head whitish tinged with rufous; tegulæ white, with rufous medial line and black tips; thorax grey mixed with rufous, the patagia edged with white above; abdomen grey. Fore wing lilacine grey with some dark irroration, the costal area rufous from middle to subterminal line; the cell filled in with black before and between the stigmata and beyond the reniform, the medial area suffused with rufous from cell to vein 1; the subbasal line represented by black striæ from costa and cell, a wedge-shaped black mark beyond it above vein 1; antemedial line very strongly angled outwards below costa, oblique below cell, slightly excurved at submedian fold, angled outwards above inner margin; claviform ochreous white defined by black, elongated and pointed at extremity; orbicular and reniform grey, the former rounded, open above, the latter narrow, angled inwards on median nervure and with some rufous in centre; postmedial line dentate and produced to points on the veins, excurved from costa to vein 4, then oblique; subterminal line pale, angled outwards at vein 7 and excurved slightly at middle, the area beyond it darker; a terminal series of black lunules. Hind wing grey irrorated with fuscous, the terminal area suffused with fuscous, a discoidal lunule and sinuous dentate postmedial line more distinct on underside.

Hab. Greenland; Canada, Labrador, in Coll. Püngeler. *Exp.* 36 millim.

*537. Euxoa laminis. (Plate LXVI. fig. 18.)

Carneades laminis, Smith, Pr. U.S. Nat. Mus. xxii. p. 460 (1900).

♂. Dull fuscous; head brown; tegulæ with a rufous shade at base, and broad black medial line; thorax mostly clothed with flattened hair, the crests prominent. Fore wing suffused with ashen grey; the costal area grey to postmedial line; a fine black streak below base of cell; subbasal line double, blackish, interrupted at cell; antemedial line double, fuscous, indistinct, oblique and excurved in interspaces, almost obsolete below cell; claviform barely traceable; orbicular small, irregular, oblique, with fuscous centre and grey annulus partly defined by black; reniform moderate, with fuscous centre defined by black and grey annulus; the cell before and between the stigmata blackish; postmedial line double at costa, then single, fine, crenulate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line grey, irregular, interrupted below costa by a grey apical patch, defined on inner side by a dark patch at costa and somewhat dentate marks at middle, the area beyond it dark except at apex, a terminal series of small black lunules and yellowish line at base of cilia. Hind wing dirty yellowish white, with fuscous terminal band; the veins and a discoidal lunule smoky; cilia yellowish at base, with brown medial line and white tips.

Hab. U.S.A., Middle California (*Barnes*). *Exp.* 34 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

538. Euxoa tesselloides. (Plate LXVI. fig. 19.)

Agrotis tesselloides, Grote, Bull. Geol. Surv. vi. p. 566 (1880); Smith, Cat. Noct. N. Am. p. 107.

♀. Head and thorax brown mixed with grey; tegulæ grey, with black medial line; legs banded with black; abdomen pale brown, the ventral surface grey slightly irrorated with brown, the sides more strongly irrorated. Fore wing grey strongly irrorated with brown; a slight black streak below base of cell; the subbasal line double, black, strongly dentate inwards on median nervure, then oblique to vein 1; the antemedial line double, slightly dentate outwards below costa and in cell, angled inwards on subcostal and median nervures and excurved below the cell; the claviform with its outer edge defined by black; the orbicular and reniform grey, defined by black, the former oblique, elliptical, varying much in size, the latter large, its centre defined by fuscous, the cell before and between the stigmata and the area between the reniform and postmedial line more or less strongly tinged with brown, often very faintly; an indistinct waved medial line from cell to inner margin; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line angled outwards at vein 7 and excurved at middle, the area between it and the postmedial line blue-grey, the area beyond it dark with a bluish-grey patch at

apex. Hind wing whitish, strongly tinged with brown especially on terminal area, the veins brown; cilia white, with a brown line at base; the underside with the costal and terminal areas irrorated with brown, a discoidal point.

Hab. U.S.A., Montana, Colorado, California, Havilah, 5 ♀ type, Grote Coll., Arizona. *Exp.* 40 millim.

539. Euxoa silens. (Plate LXVI. fig. 20.)

Agrotis silens, Grote, Can. Ent. vii. p. 67 (1875); Smith, Cat. Noct. N. Am. p. 107.

♂. Head, thorax, and abdomen grey, mixed with dark brown. Fore wing grey, strongly irrorated with brown; a blackish fascia below the cell from base to middle of wing, but less distinct towards its extremity; the subbasal, antemedial, and postmedial lines obsolete; the orbicular and reniform grey, defined by blackish, the former elongate, elliptical, the latter moderate, the cell before and between the stigmata reddish brown; the veins of terminal area streaked with brown; the subterminal line grey, very indistinct, excurved, and with a series of dentate brown marks before it at middle; a terminal series of black points. Hind wing white, tinged with brown towards margins, the veins brown; the underside with the costal area slightly irrorated with brown.

Hab. U.S.A., Nevada, 1 ♂ type. *Exp.* 40 millim.

*540. Euxoa silenis. (Plate LXVI. fig. 21.)

Carneades silenis, Smith, Pr. U.S. Nat. Mus. xxii. p. 459 (1900).

♀. Ashen grey on a slight ochreous ground-colour; base of frons and tegulæ ochreous, the latter with black medial line and grey tips; patagia edged with black; thorax clothed with scales and hair, the costa well developed. Fore wing with the lines indistinct; subbasal line double, barely traceable; a slight black streak below base of cell; antemedial line double, oblique, excurved in interspaces; claviform long, slender, incompletely defined by black; orbicular small, elliptical, with pale annulus defined by black; reniform small, with fuscous centre and yellowish annulus defined by black; the cell fuscous before and between the stigmata; postmedial line distinct at costa, then obsolescent, bent outwards below costa, excurved to vein 4, then oblique; subterminal line distinct, yellowish, angled outwards at vein 7 and excurved at middle, defined on inner side by a dark spot on costa, then by a somewhat dentate shade, the area beyond it fuscous; a terminal series of dark lunules; cilia yellowish at base, and with dark medial line intersected with white. Hind wing white, the terminal area rather broadly tinged with fuscous; the underside with the costal area irrorated with fuscous.

Hab. U.S.A., California, Los Angelos (*Coquillet*). *Exp.* 31 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

541. Euxoa divergens. (Plate LXVI. fig. 22.)

Agrotis divergens, Wlk. x. 327 (1856); Smith, Cat. Noct. N. Am. p. 107.
Agrotis versipellis, Grote, Can. Ent. vii. p. 172, pl. i. f. 9 (1875).

♂. Head and thorax purplish red-brown mixed with grey and white; palpi blackish at sides; tegulæ with medial black line; tibiæ and tarsal joints at extremities with white rings; abdomen grey-brown, the anal tuft fulvous. Fore wing brown, suffused with purplish grey except just below the cell; the costal area suffused with grey to the postmedial line; a black fascia below base of cell, and pure white streaks on median nervure and base of subcostal nervure; the subbasal line curved, whitish from costa to vein 1; the antemedial line grey, defined by black on each side, excurved in and below cell and more strongly above inner margin; the claviform strongly defined by black; the orbicular and reniform defined by black, with grey annuli and grey-speckled brown centres, the former oblique, the latter moderate, the cell before and between them and the area between the reniform and postmedial line black; the postmedial line dentate, black defined by grey on outer side, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line grey, excurved at middle; a terminal series of black points; a fine pale line at base of cilia. Hind wing brown, whitish towards base; the cilia white, with a brown line through them; the underside more irrorated with brown; a discoidal lunule and traces of curved postmedial line.

♀. The anal tuft not fulvous; the hind wing more uniform brown.

Hab. Canada, Nova Scotia (*Redman*), 2 ♂ type; U.S.A., 3 ♂, 1 ♀ type *versipellis*, Maine, Massachusetts, Colorado, California, Sierra Nevada, 1 ♀ Grote Coll. *Exp.* 40 millim.

Larva. Dyar, Proc. Ent. Soc. Wash. iv. p. 318 (1899).

Head 2·9 millim., shining brown, the dark curved vertical shade distinct above and near the median suture; reticulations pale, obscure, dividing the sides into rounded dark spots. Cervical shield brown, darker before and behind, bisected by pale. Body sordid greyish, translucent, scarcely marked. Dorsal area broadly pale and nearly straight, subventral region light; spiracles black; setæ minute. Probably a general feeder.—H. G. D.

*542. Euxoa nordica. (Plate LXVI. fig. 23.)

Carneades nordica, Smith, Pr. U.S. Nat. Mus. xxii. p. 455 (1900).

♂. Head and thorax very dark brown mixed with some grey; frons with black bars at middle and between antennæ; tegulæ more rufous, with strong black medial line; tarsi with pale rings; abdomen pale red-brown. Fore wing very dark brown, the costal and inner areas tinged with grey; a double, waved, black subbasal line filled in with grey from cell to submedian fold, and with a blackish streak below cell and pale grey spot beyond it in cell before the double, waved, oblique antemedial line, which is somewhat angled outwards below costa; claviform small, defined by black; orbicular small,

oblique, elliptical, whitish irrorated with fuscous; reniform grey, tinged with brown, its centre defined by brown; the cell before and between the stigmata deep black; a slight oblique waved line from lower angle of cell to inner margin; the postmedial line minutely dentate, defined by grey on outer side, bent outwards below costa, excurved to vein 4, then incurved; some whitish points on costa towards apex; the subterminal line pale, defined by slight dentate black marks before it at middle and by the area beyond it being darker except at apex which is greyish, angled outwards at vein 7, excurved and somewhat dentate at middle; a terminal series of black points. Hind wing whitish, tinged with pale brown, the terminal area darker; the cilia white, with brownish line at base; the underside white, the costal and terminal areas irrorated with brown, a discoidal point and curved postmedial line.

Hab. Canada, Calgary, in Coll. J. B. Smith, Br. Columbia, Olds. *Exp.* 36 millim.

543. **Euxoa fusimacula.** (Plate LXVI. fig. 24.)

Carneades fusimacula, Smith, Trans. Am. Ent. Soc. xviii. p. 105 (1891); id. Cat. Noct. N. Am. p. 107.

♂. Head and thorax dark brown and grey mixed, suffused with purplish red; tegulæ with black medial line; abdomen fuscous brown and grey mixed. Fore wing dark brown and grey mixed, slightly suffused with purplish red; median nervure streaked with white; a double subbasal line from costa to submedian fold, where there is a black mark on its outer edge, filled in with white and angled inwards in cell; claviform rather elongate, defined by black; orbicular and reniform with greyish annuli defined by black, the former oblique, elliptical, the latter angled inwards on medial nervure and confluent or nearly confluent with the former, the cell before and between them blackish; the postmedial line minutely waved, defined by greyish on outer side, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line greyish, angled outwards at vein 7 and excurved at middle, the area beyond it slightly darker; a terminal series of blackish points. Hind wing fuscous brown; the underside grey irrorated with fuscous, a dark discoidal lunule and traces of a postmedial line.

Hab. U.S.A., California, Sierra Nevada, 1 ♂, New Mexico. *Exp.* 38 millim.

*544. **Euxoa cæsia.** (Plate LXVI. fig. 25.)

Carneades cæsius, Smith, Pr. U.S. Nat. Mus. xxii. p. 457 (1900).

♀. Reddish brown suffused with blue-grey; head tinged with carmine; tegulæ blue-grey, with a carmine transverse line above middle; thorax robust, clothed with fine and flattened hair, the patagia brown, the crests well-marked and blue-grey. Fore wing blue-grey, with the basal area brown below the cell; subbasal line only represented below cell where it intersects the black streak; antemedial line represented by a grey line in submedian interspace;

claviform large, broad, brown; orbicular large, round, brown with a blue-grey annulus; reniform broad, brown with a grey annulus; cell black before and between the stigmata; postmedial line marked at costa, only defined beyond the cell by brown shading on its inner side, then obsolete; subterminal line grey, defined on inner side by a dark mark on costa, then by a slight shade, the area beyond it fuscous; a fine lunulate terminal line and a yellowish line at base of cilia. Hind wing fuscous, dull ochreous at base; cilia yellowish at base, with dark medial line and whitish tips; the underside with the costal and terminal areas dark, a dark discoidal spot.

Hab. U.S.A., Middle California (*Barnes*). *Exp.* 34 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

545. Euxoa redimicula. (Plate LXVI. fig. 26.)

Agrotis redimicula, Morr. Proc. Bost. Soc. N. H. xvii. p. 165 (1874); Smith, Cat. Noct. N. Am. p. 107.

Head chocolate-brown and grey mixed; tegulæ grey in front, with black medial line, then chocolate with grey at tips; patagia and thorax chocolate more or less mixed with grey, the vertex of thorax grey; pectus grey; legs dark brown; abdomen grey-brown. Fore wing brown suffused with grey; the costal and inner areas very strongly suffused with bluish grey; the subbasal line grey, retracted to base below the cell; the antemedial line grey, acutely angled outwards below costa and inwards on median nervure, then oblique to vein 1 and angled outwards above inner margin; claviform distinctly defined by black, with an oblique grey streak above its extremity on vein 2; orbicular and reniform grey, the former oblique, the latter rather small, the cell before and between them and the area between the reniform and postmedial line black-brown; the postmedial line grey, with slight dentate dark marks on its inner edge, bent outwards below costa, excurved to vein 4, then oblique, a bluish-grey band on its outer side with irregularly sinuous outer edge indented in discal and submedian folds and conjoined to a grey apical mark; a fine dark terminal line; cilia grey-brown, with a dark line through them. Hind wing dark brown; the cilia white, with a brown line through them; the underside paler, the costal and terminal areas irrorated with brown, a slight discoidal lunule and curved postmedial line.

Hab. Canada; U.S.A., N.E. States, Massachusetts, 1 ♀ Grote Coll., N. York, Colorado (*Bruce*), 2 ♂, 1 ♀. *Exp.* 36 millim.

*546. Euxoa acutifrons. (Plate LXVI. fig. 27.)

Carneades acutifrons, Smith, Pr. U.S. Nat. Mus. p. 458 (1900).

♀. Head and thorax reddish brown mixed with grey; lower part of frons whitish; tegulæ ochreous white at base and with black medial line; tarsi blackish with white rings; abdomen grey-brown.

Fore wing grey, the area below and beyond cell suffused with rufous; a black fascia below base of cell; the costal area whitish to the postmedial line, expanding into the cell at base; the subbasal line represented by a black striga from costa; the antemedial line strong, black, defined by grey on inner side, oblique, waved and angled inwards on median nervure and vein 1; claviform moderate, defined by black; orbicular and reniform with brownish centres and white annuli defined by black, the former small, oblique, elliptical, open above, the cell before and betweem them and the area between reniform and postmedial line suffused with black; the postmedial line strong, black, minutely dentate, bent outwards below costa, excurved to vein 4, then very oblique, the area beyond it pale rufous shading to grey before the subterminal line, which is defined by the area beyond it being blackish and by minute black streaks on its inner side above and below vein 5, bent outwards to apex and excurved at middle; some pale points on costa towards apex; a terminal series of small black lunules. Hind wing brownish grey, with dark minutely waved terminal line; the cilia white; the underside white, the costal area irrorated with fuscous, a blackish discoidal bar and slight diffused curved postmedial line.

Hab. U.S.A., Oregon, Corvallis, in Coll. J. B. Smith, California. *Exp.* 38 millim.

547. Euxoa strigilis. (Plate LXVI. fig. 28.)

Agrotis strigilis, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 81 (1876); Smith, Cat. Noct. N. Am. p. 107.

♀. Head and thorax fuscous brown, the scales tipped with white; palpi and neck with some olive hairs; abdomen reddish brown, the anal tuft fulvous, the ventral surface greyish irrorated with dark brown, the segments fringed with pinkish. Fore wing fuscous brown sparsely irrorated with white; the subbasal line indistinct, waved, whitish, from costa to submedian fold; the antemedial line black, defined by white on inner side, angled outwards in cell and above inner margin, inwards on median nervure and vein 1; the claviform indistinct, small, black with a few white scales on it; the orbicular and reniform concolorous, with white annuli defined by black, the former oblique, open above, the latter well-developed; the postmedial line blackish, with a dark shade on its inner side, defined by white scales and points on the veins on outer side, bent outwards below costa, then minutely dentate, excurved to vein 4, then incurved: the subterminal line whitish, angled outwards at vein 7 and excurved at middle; a series of black points on termen. Hind wing whitish suffused with brown, the veins, a discoidal point, and the marginal areas brown; cilia white, brown at base; the underside with the costal and terminal areas irrorated with brown; a discoidal point and a terminal series.

Hab. Canada, Vancouver I., 1 ♀ type Grote Coll. *Exp.* 38 millim.

*548. Euxoa servita. (Plate LXVI. fig. 29.)

Carneades servitus, Smith, Ent. News, Philad. vi. p. 336, pl. xv. f. 8 (1895).

Bluish grey; tegulæ with the base pale, a medial black line. Fore wing with the grey ground-colour extending along costal area and through the cell to end of reniform, obliterating the orbicular and leaving a small triangular black spot between it and reniform; subbasal line represented by black points below costa and cell; a black streak below base of cell crossed by a pale striga beyond subbasal line; antemedial line angled inwards on median nervure, then oblique and angled outwards above inner margin; claviform large, defined by black; medial area below the cell and beyond the reniform suffused with black; postmedial line single, even, bent outwards below costa, excurved to vein 4, then oblique; subterminal line defined on inner side by a dark shade at costa and two dentate marks at middle, the area beyond it rather darker, angled outwards at vein 7 and excurved at middle; a dusky terminal line and pale line at base of cilia. Hind wing fuscous, with a yellowish tinge in male; the underside with slight dark discoidal lunule and incomplete postmedial line.

Hab. Canada, Calgary (*Dod*); U.S.A., Colorado (*Bruce*). *Exp.* 30 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

549. Euxoa pictifascia. (Plate LXVI. fig. 30.)

Heliothis pictifascia, Hmpsn. P. Z. S. 1896, p. 259, pl. 10. f. 8.

♀. Head and thorax grey-white mixed with pale rufous and blackish; patagia with white streak defined by black above; tarsi banded with black; abdomen brownish white, the ventral surface white irrorated with brown. Fore wing grey tinged with pale brown; a black-irrorated ochreous and pale rufous fascia in submedian fold and another in discal fold from orbicular to termen; costa blackish with some pale points; antemedial line and claviform represented by ochreous marks on submedian fascia; orbicular and reniform with blackish centres and ochreous annuli defined by black, the former small, elongate; the postmedial line indistinct, pale, bent outwards below costa, then obliquely curved and represented by ochreous marks on discal and submedian fasciæ; the subterminal line represented by a series of ochreous spots on dentate blackish marks; a terminal series of black points; cilia ochreous intersected with black. Hind wing pure white, the termen with fine dark line: the underside with some fuscous irroration on costal area and black discoidal spot.

Hab. Erithrea, Massowah (*Barker*), 1 ♀; Somaliland, Zaila (*Nurse*), 1 ♀ type, Dhobar (*Gillett*), 1 ♀. *Exp.* 34–38 millim.

550. Euxoa axiliodes, n. sp. (Plate LXVI. fig. 31.)

Head pale brown mixed with black; tegulæ pale brown, with

some white on basal half, followed by a blackish line, and the tips black; thorax blackish; abdomen ochreous, dorsally tinged with fuscous, with lateral blackish lines and the ventral surface irrorated with black. Fore wing pale ochreous, greyish towards costa, the veins and interspaces with brown streaks; the costa suffused with fuscous; a black streak in submedian fold developed into a prominent fascia towards base; orbicular and reniform very small, with fuscous centres and grey annuli placed on a deep black fascia extending to beyond the cell; the subterminal line defined by the area beyond it being blackish and by a fuscous patch before it on costa, dentate at the veins, arising from apex, angled inwards in discal and submedian folds and outwards to near termen at vein 4; a terminal series of black points; cilia pale brown, with a dark line at base. Hind wing pure white; the costal area suffused with fuscous; a fine dark terminal line.

Ab. 1. Tegulæ at tips and thorax ochreous and pale brown.

Hab. Br. E. Africa, Athi-ya-Mawe, 5 ♂ type, Athi R., 2 ♀, Eb Urru (*Betton*), 4 ♀. *Exp.* 26–32 millim.

*551. Euxoa lineifera. (Plate LXVI. fig. 32.)

Noctua lineifera, Blanch. Gay's Faun. Chile, Ins. p. 76 (1852).

♂. Head and base of tegulæ whitish, the latter at tips and thorax black; abdomen brownish white. Fore wing fuscous brown; the costal area whitish to beyond middle; the veins defined by white streaks; lines and stigmata absent; a black streak below base of cell; the subterminal line only defined by the dark streaks in interspaces beyond cell stopping before termen, the white streaks extending to rather nearer termen; a dark terminal line. Hind wing fuscous brown, whitish towards costa and inner margin, the underside whitish.

Hab. Chile, Coquimbo, type † ♂ in bad condition in Mus. Paris. *Exp.* 34 millim.

Sect. V. (*Chorisagrotis*). Antennæ of male minutely serrate and fasciculate.

A. Fore wing with the costal area distinctly paler than the ground-colour.
  a. Fore wing with the ground-colour black, the base of costal area and stigmata white ..... *lidia.*
  b. Fore wing with the ground-colour purplish brown to grey-brown.
    a^1. Fore wing without pale streak on median nervure..... *oberthuri.*
    b^1. Fore wing with pale streak on median nervure ..... *auxiliaris.*
B. Fore wing with the costal area grey tinged with rufous in male ..... *sorella.*
C. Fore wing with the costal area concolorous.
  a. Fore wing grey-brown.
    a^1. Fore wing with the lines distinct; claviform present.
      a^2. Fore wing with the antemedial line strong, single ... *balinitis.*
      b^2. Fore wing with the antemedial line fine, double..... *agrestis.*
  b. Fore wing dark fuscous brown.
    a^1. Fore wing with the cell between the stigmata black ... *terrealis.*
    b^1. Fore wing with the cell concolorous..... *intracta.*
  c. Fore wing ochreous tinged with rufous..... *xanthiodes.*

552. Euxoa lidia.

Noctua lidia, Cram. Pap. Exot. iv. p. 222, pl. 396. f. D (1782); Herr.-Schäff. Eur. Schmett., Noct. f. 27; Staud. Cat. Lep. pal. p. 149.
Agrotis inexpectata, Alph. Rom. Mém. ix. p. 158, pl. 11. f. 8 (1897).

Head reddish brown or black mixed with white; thorax black, the basal half of tegulæ white slightly mixed with rufous; legs black, ringed with white; abdomen fuscous, the anal tuft rufous. Fore wing pale vinous red or grey, more or less completely suffused with black; the costal area and the area beyond postmedial line pale; a waved whitish subbasal line from costa to submedian fold; a waved antemedial line defined by whitish on inner side; claviform large, indistinctly defined by black and pointed at extremity; orbicular and reniform white with slight fuscous centres, the former round or oblique, elliptical; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique, the area beyond it purplish or reddish grey to the subterminal line, which is whitish, minutely dentate, angled outwards at vein 7 and excurved at middle, defined by a series of dentate black marks on its inner side and a whitish patch beyond it at apex; a terminal series of black points; cilia brownish mixed with fuscous. Hind wing pale suffused with fuscous brown, especially towards termen; cilia white, with a brown line at base; the underside white, the costal and terminal areas suffused with fuscous, a small discoidal spot.

Ab. 1. *inexpectata*. Larger; fore wing with the costa and stigmata grey.

Hab. Holland; Jutland; S.E. Germany, Zeller & Mutzell Colls.; E. Siberia, Ussuri. *Exp.* 38 millim.

553. Euxoa oberthuri. (Plate LXVII. fig. 1.)

Agrotis oberthuri, Leech, Trans. Ent. Soc. 1900, p. 30.
Agrotis tritici, Leech, Trans. Ent. Soc. 1900, p. 29 (nec Linn.)

Head and thorax red-brown; tegulæ with black medial line; the extremities of tegulæ and greater part of patagia often purplish fuscous; legs mostly black; abdomen fuscous brown, the ventral surface ochreous irrorated with brown. Fore wing pale red-brown tinged with purple; the costal area ochreous white at base, shading to pale rufous towards apex; the subbasal line represented by a black fascia below costa and a pale striga on the black fascia below base of cell; the antemedial line indistinct, double, waved, angled outwards below costa and above inner margin; claviform defined by black; orbicular and reniform greyish defined by black and their centres by fuscous, the former small, round or oblique, elliptical, the cell before and between them and the disk beyond the reniform suffused with black; the postmedial line minutely dentate, bent outwards below costa, slightly incurved in discal fold, oblique below vein 4; the subterminal line pale, minutely waved, excurved at vein 7 and middle, and defined on inner side by dentate black marks below costa and between veins 6 and 2, the area

beyond it purplish fuscous with a terminal series of black points. Hind wing ochreous whitish suffused with fuscous brown, darker in female; cilia whitish, with brown line at base; the underside paler, the costal area irrorated with brown.

Hab. Japan (*Pryer*), 1 ♂, Hakodate (*Andrews*), 3 ♂, 1 ♀, Tokio (*Maries*), 2 ♂; W. China, Ta-chien-lu (*Pratt*), 2 ♂, 2 ♀, type. *Exp.*, ♂ 42, ♀ 46 millim.

554. Euxoa auxiliaris. (Plate LXVII. fig. 2.)

Agrotis auxiliaris, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 96 (1873), ♀; Smith, Cat. Noct. N. Am. p. 78.

Agrotis introferens, Grote, Proc. Ac. Nat. Sci. 1875, p. 423, ♂; Harv. Bull. Buff. Soc. Nat. Sci. iii. p. 74, pl. 3. f. 10; Smith, Cat. Noct. N. Am. p. 78.

Agrotis sorror, Smith, Pr. U.S. Nat. Mus. x. p. 453 (1887); id. Cat. Noct. N. Am. p. 78.

♂. Head and thorax dark brown; frons with black bar; tegulæ with the basal half ochreous, defined by a black medial line; pectus and legs brown mixed with grey; abdomen grey-brown, tinged with fulvous at extremity. Fore wing dark brown; the costal area clear ochreous to the postmedial line, extending at base to median nervure; the area below vein 1 ochreous to the postmedial line; a white streak on median nervure; the subbasal line represented by an oblique ochreous striga below the cell; the antemedial line ochreous, defined by black on outer side, acutely angled outwards in cell and above inner margin and obtusely in submedian fold; claviform defined by black, and with an ochreous streak from its extremity to the subterminal line; orbicular and reniform whitish, their centres tinged with brown defined by brown annuli; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line whitish, angled outwards at vein 7 and inner margin and dentate at veins 4 and 3, with a series of dentate black marks on its inner side on the ochreous band which occupies the area between postmedial and subterminal lines except towards costa; an ochreous apical patch and a terminal series of black points. Hind wing brown; the disk slightly whitish; cilia white, with a brown line at base; underside white; the costal area irrorated with brown; the veins, terminal area, and a discoidal point brown; (claspers, Smith, Bull. U.S. Nat. Mus. 38. pl. 4. f. 45).

♀. Fore wing with the costal area grey.

Ab. 1. Fore wing with the base of tegulæ and costal area irrorated with fuscous; (claspers, Smith, Bull. U.S. Nat. Mus. 38. pl. 4. f. 46).

Hab. U.S.A., Kansas (*Snow*), 2 ♂, Texas, 1 ♂ type *introferens*, Montana, Colorado (*Cockerell, Bruce*), 3 ♂, 6 ♀ type, New Mexico, Las Vegas (*Cockerell*), 1 ♀. *Exp.* 42–50 millim.

555. Euxoa sorella. (Plate LXVII. fig. 3.)

Chorizagrotis sorella, Schaus, J. N. Y. Ent. Soc. vi. p. 141 (1898).

♂. Head and thorax purplish brown; tegulæ reddish at base and extremity and with black medial line; abdomen grey-brown, the ventral surface white irrorated with brown. Fore wing purplish brown, slightly tinged with reddish below basal half of costa; the subbasal line defined on each side by black, interrupted below costa and interrupting the black streak below base of cell; the antemedial line double, strongly angled outwards in and below cell and above inner margin, conjoined to the claviform which is very elongate and defined by black; the orbicular and reniform with black outlines, inside which are a few grey scales, the former round, the latter large, and with a black streak in cell before and between them; the postmedial line indistinct, dark, dentate, excurved from costa to vein 4, then oblique; a subterminal series of small dentate black and grey marks, those above veins 4 and 5 more distinct. Hind wing semihyaline white tinged with brown; the veins and terminal line brown; cilia white, with a brown line at base.

♀. Tegulæ with the basal half yellowish; thorax without red tinge on costal area.

Hab. Mexico, Las Vegas (*Hoege*), 1 ♀, Godman-Salvin Coll., Cobre de Perote, type † ♂ in Coll. Schaus. *Exp.* 42 millim.

556. Euxoa balinitis. (Plate LXVII. fig. 4.)

Agrotis balinitis, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 97, pl. 3. f. 14 (1873); Smith, Cat. Noct. N. Am. p. 79.

♀. Head ochreous white; palpi at sides and vertex of head suffused with fuscous brown; thorax fuscous brown slightly pencilled with grey, the tegulæ whitish at base; pectus and legs brownish white, the latter marked with dark brown above; abdomen whitish tinged with brown, the ventral surface whitish irrorated with brown, and with sublateral black lines except towards base. Fore wing grey-brown irrorated with black; the costal area and base of inner area rather greyer; an indistinct, waved, black subbasal line from costa to submedian fold; a black antemedial line, angled outwards below costa and in cell and inwards on vein 1, excurved below cell and above inner margin; the outer edge of claviform defined by black; orbicular and reniform grey-brown with whitish annuli defined by black lines, the former rather diamond-shaped, the latter with some fuscous in its lower portion; the postmedial line strongly dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale, with fuscous on its inner edge and rather dentate at middle; a terminal series of black points. Hind wing white tinged with brown; cilia white, with a brownish line at base; the underside

white, the costal area irrorated with brown; a discoidal point, postmedial series of short streaks on the veins, and terminal series of striæ.

Hab. Canada, Br. Columbia; U.S.A., Colorado, 1 ♀ type, Grote Coll. *Exp.* 40 millim.

557. Euxoa agrestis.

Agrotis auxiliaris var. *agrestis*, Grote, Bull. Geol. Surv. iii. p. 118 (1877); Smith, Cat. Noct. N. Am. p. 78.
Agrotis mercenaria, Grote, Bull. Geol. Surv. iv. p. 171 (1878).
Agrotis flexilis, Morr. MS., Smith, Bull. U.S. Nat. Mus. 38. p. 101 (1890).

Head and thorax pale red-brown, the scales tipped with grey; 2nd joint of tarsi dark at sides; abdomen darker brown, somewhat rufous at extremity. Fore wing pale reddish brown suffused with grey; the subbasal line double, waved, very indistinct; the antemedial line double, indistinct, acutely angled outwards in cell and above inner margin and excurved below the cell; claviform elongate, outlined

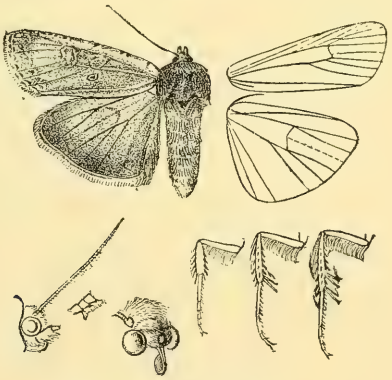


Fig. 62.—*Euxoa agrestis*, ♂. ½.

with black; orbicular and reniform concolorous, outlined with black, the former oblique, elliptical, the latter well-developed and with more or less fuscous on its lower part; a dentate postmedial line, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line greyish, angled outwards at vein 7 and excurved at middle, sometimes with slight dentate black marks on its inner side at middle; a terminal series of black points. Hind wing brown, the interspaces of discal area whitish; cilia white, with brown line at base; underside whitish, the costal and terminal areas irrorated with brown; a slight discoidal point.

Hab. U.S.A., Nebraska, Kansas, Texas, Colorado (*Cockerell*), 6 ♂, 10 ♀ type and type *mercenaria*, California; Mexico, Las Vegas (*Hoege*), 1 ♂, Godman-Salvin Coll. *Exp.* 42–48 millim.

Larva (Original).—Head 3·5 mm. broad, the lobes well separated at vertex by the membranous area, pale brown, the reticulations paler, a brown band bordering clypeus without, the clypeus infuscated centrally. Body thin-skinned ; cervical shield cornified, shining brown, cut by pale dorsal line and subdorsal shade. Traces of pale dorsal line, centering the broad dorsal space which is whitish at its edges, these white lines broader at the incisures. Traces of pale subdorsal and lateral lines ; substigmatal band broad, pale, ill-defined. Tubercles large and well-cornified, dark brown ; anal shield and leg-plates brown. A general feeder.—H. G. D.

558. Euxoa inconcinna. (Plate LXVII. fig. 5.)

Agrotis inconcinna, Harv. Bull. Buff. Soc. Nat. Sci. iii. p. 5 (1875) ; Smith, Cat. Noct. N. Am. p. 78.
Agrotis differens, Druce, Biol. Centr.-Am., Het. i. p. 285 (nec Wlk.).

Head and thorax yellowish brown ; abdomen pale brown. Fore wing yellowish or greyish brown ; the markings indistinct ; a double, waved, subbasal line from costa to submedian fold ; the antemedial line double, waved ; claviform obsolete ; orbicular and reniform concolorous, slightly edged with black, the former round, the latter with some fuscous in its lower part ; the postmedial line minutely dentate, strongly bent outwards below costa, excurved to vein 4, then oblique ; the subterminal line greyish, with some reddish brown on its inner edge, angled outwards at vein 6 and excurved at middle ; a terminal series of black points. Hind wing whitish, tinged with brown especially towards margins ; the veins brown ; cilia white, with a brown line at base.

Hab. U.S.A., Texas, 3 ♂ type, Colorado, Arizona ; Mexico, Sonora (*Morrison*), 1 ♀, Las Vegas (*Hoege*), 1 ♂, 1 ♀, Godman-Salvin Coll. *Exp.* 42 millim.

*559. Euxoa terrealis. (Plate LXIX. fig. 15.)

Agrotis terrealis, Grote, Trans. Kans. Ac. Sci. viii. p. 47 (1882) ; Smith, Cat. Noct. N. Am. p. 79.

Dark fuscous brown ; tegulæ darker at base. Fore wing with the costal area brick-red ; a black streak below base of cell ; antemedial line double, only traceable between median nervure and vein 1 ; claviform distinct, narrow ; orbicular elliptical, oblique, grey ; reniform grey ; cell black before and between the stigmata ; postmedial line obsolete ; subterminal line sinuous, hardly dentate, represented by a few pale scales, the area beyond it rather darker. Hind wing fuscous, rather paler towards base ; the underside paler, especially towards base, a distinct discoidal lunule.

Hab. U.S.A., New Mexico. *Exp.* 37 millim. This species is unknown to me ; figured from a drawing from type in Brooklyn Inst. Arts & Sci.

560. Euxoa intracta. (Plate LXVII. fig. 6.)

Agrotis intracta, Wlk. x. 346 (1856); Hmpsn. Moths Ind. ii. p. 183.
Spælotis ambigua, Butl. Ill. Het. vii. p. 54, pl. 128. ff. 10, 11 (1889).

Head and thorax dark reddish brown mixed with grey; abdomen grey-brown. Fore wing dark reddish brown, sometimes tinged with fuscous, and irrorated with blackish; a double, waved, subbasal line from costa to submedian fold; an oblique, double, waved, antemedial line; claviform moderate, defined by black; orbicular and reniform with more or less developed greyish annuli defined by black, the former round; an indistinct waved medial line angled outwards to lower angle of cell; the postmedial line double, minutely waved, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line indistinct, pale, angled outwards at vein 7 and excurved at middle, defined by the area beyond it being darker and by slight dark marks on its inner side at costa and middle; a terminal series of black points. Hind wing dark brown, the cilia greyish at tips; the underside with the costal area suffused with grey and irrorated with brown.

Ab. 1. Fore wing uniform fuscous or red-brown, without dark irroration.

Ab. 2. Head, thorax, and fore wing uniform black-brown without dark irroration, the grey annuli of stigmata prominent; hind wing whitish, the veins and terminal area brown.—Japan.

Hab. Japan, Yokohama (*Lewis*, *Pryer*), 3 ♂, Oiwake (*Leech*), 1 ♀, Hakodate (*Leech*), 1 ♀; W. China, Chia-kou-ho (*Pratt*), 1 ♂, 1 ♀, Ta-chien-lu (*Pratt*), 2 ♂, Chow-piu-sa, 1 ♂, Moupin (*Kricheldorf*), 1 ♀; Kashmir, Narkundah (*McArthur*), 3 ♂, 1 ♀; Punjab, Thundiani (*Yerbury*), 1 ♂, Sultanpur (*G. Young*), 1 ♂, 1 ♀, Dharmsála (*Hocking*), 2 ♂, 3 ♀ type *ambigua*; Nepal (*Hardwicke*), 1 ♂ type; Tibet, Yatong (*Bingham*), 1 ♂, 1 ♀; Sikhim (*Atkinson*), 1 ♂. *Exp.* 46–50 millim.

561. Euxoa xanthiodes, n. sp. (Plate LXVII. fig. 7.)

♂. Head and thorax pale rufous; palpi and fore coxæ redder; fore tibiæ and tarsi whitish in front; abdomen reddish ochreous. Fore wing ochreous suffused with rufous; an indistinct antemedial line, angled inwards in cell and on vein 1 and outwards in submedian fold and above inner margin; orbicular and reniform small, pale, indistinct, the former round, an obscure medial shade passing between them; the postmedial line indistinct, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; an indistinct minutely waved subterminal line, slightly angled outwards at vein 7 and excurved at middle. Hind wing ochreous yellow, slightly tinged with fuscous brown except on termen and cilia. Underside of fore wing tinged with fuscous to postmedial line except on costal area; hind wing yellow, the costal area tinged with rufous, an indistinct curved postmedial line.

♀. More olive-yellow and less rufous in tone; fore wing with the markings more distinct.

Hab. Kashmir, Barra Larcha (*McArthur*), 1 ♂ type, Goorais Valley (*Leech*), 1 ♀. *Exp.* 38–40 millim.

Sect. VI. (*Rhiacia*). Antennæ of male ciliated.

A. Fore wing with the median nervure streaked with white.
  a. Fore wing with veins 1–4 streaked with white ..... *difficilis.*
  b. Fore wing with veins 1–4 not streaked with white ..... *flavicollis.*
B. Fore wing with the median nervure not streaked with white.
  a. Fore wing with the ground-colour purplish fuscous.
    a^1. Fore wing with prominent ochreous-white costal fascia.
      a^2. Fore wing with the cilia pale rufous with dark lines through them ..... *manethusa.*
      b^2. Fore wing with the cilia chequered ochreous and black ..... *acclivis.*
    b^1. Fore wing with the costal area indistinctly pale tinged with rufous.
      a^2. Fore wing with black patch in cell between the stigmata ..... *albicosta.*
      b^2. Fore wing without black patch in cell between the stigmata ..... *proclivis.*
    c^1. Fore wing with the costal area concolorous ..... *fumicolor.*
  b. Fore wing pale rufous, the apical area purplish fuscous... *apicalis.*
  c. Fore wing ochreous to grey, grey-brown, or rufous.
    a^1. Fore wing with the cell filled in with black.
      a^2. Hind wing pure white ..... *cleiducha.*
      b^2. Hind wing suffused with fuscous ..... *marcida.*
    b^1. Fore wing with the cell not filled in with black.
      a^2. Fore wing with black streak above median nervure conjoined to a black discoidal lunule..... *t-nigrum.*
      b^2. Fore wing without black streak above median nervure.
        a^3. Tegulæ with black band at base ..... *abnormis.*
        b^3. Tegulæ without black band at base.
          a^4. Fore wing with the reniform filled in with black.
            a^5. Fore wing striated with fuscous.
              a^6. Fore wing with the costal area suffused with fuscous ..... *pronycta.*
              b^6. Fore wing with the costal area concolorous. *reclusa.*
            b^5. Fore wing irrorated with fuscous..... *indigna.*
            c^5. Fore wing without dark striation or irroration ..... *epipyria.*
          b^4. Fore wing with pale annulus to the reniform.
            a^5. Fore wing with veins 3, 4 not defined by pale dentate marks, indenting the subterminal line.
              a^6. Fore wing rufous irrorated with grey ..... *hirtipalpis.*
              b^6. Fore wing ochreous tinged with rufous, the lines and irroration strong.
                a^7. Fore wing with the terminal area more or less suffused with fuscous.
                  a^8. Hind wing pure white, the cilia brown from apex to vein 2 ..... *eremicola.*
                  b^8. Hind wing with the terminal area more or less suffused with fuscous ... *cirghisa.*

b^7. Fore wing with the terminal area not suffused with fuscous.
a^8. Hind wing whitish, at all events towards base ..... *clara.*
b^8. Hind wing uniform fuscous brown ... *ignobilis.*
c^6. Fore wing ochreous, the lines and irroration obsolescent.
a^7. Fore wing with the antemedial line waved ..... *singularis.*
b^7. Fore wing with the antemedial line evenly curved ..... *amœna.*
d^6. Fore wing grey-brown to grey.
a^7. Fore wing greyish, with the stigmata almost obsolete ..... *peperida.*
b^7. Fore wing brownish, with the stigmata obsolescent or prominent, but with slight pale annuli ..... *opisoleuca.*
c^7. Fore wing with the stigmata prominent, with whitish annuli.
a^8. Fore wing with the orbicular rounded. *forcipula.*
b^8. Fore wing with the orbicular produced to a point.
a^9. Fore wing with a prominent pale band defining the postmedial line... *exacta.*
b^9. Fore wing without pale band defining the postmedial line.
a^{10}. Fore wing with the orbicular entire.
a^{11}. Fore wing with the reniform angled inwards on median nervure.
a^{12}. Fore wing with the orbicular slightly produced ..... *glaucescens.*
b^{12}. Fore wing with the orbicular strongly produced and acute ... *turbans.*
^{11}. Fore wing with the reniform not angled inwards on median nervure ..... *signifera.*
b^{10}. Fore wing with the orbicular open above, the black line below it produced towards base.
a^{11}. Hind wing with the terminal area suffused with brown ..... *celsicola.*
b^{11}. Hind wing wholly suffused with brown ..... *improba.*
b^5. Fore wing with veins 3, 4 defined by pale dentate marks indenting the subterminal line.
a^6. Hind wing entirely suffused with brown.
a^7. Tegulæ with dark band ..... *multicuspis.*
b^7. Tegulæ without dark band ..... *æquicuspis.*
b^6. Hind wing white.
a^7. Tegulæ with black medial line ..... *lagena.*
b^7. Tegulæ without black medial line..... *albalis.*
c^4. Fore wing with the reniform ochreous defined by black ..... *aethes.*
d. Fore wing yellow suffused with fuscous grey ..... *lucipeta.*
e. Fore wing dark fuscous brown.
a^1. Hind wing white, the veins and terminal area tinged with fuscous ..... *pygmæa.*
b^1. Hind wing uniform fuscous ..... *nyctina.*

562. Euxoa difficilis.

Agrotis difficilis, Ersch. Hor. Soc. Ent. Ross. xii. p. 337 (1877); id. Rom. Mém. ii. pl. 16. f. 5; Staud. Cat. Lep. pal. p. 151.
Agrotis albivenata, Staud. Iris, v. p. 359, pl. 3. f. 4 (1892).
Agrotis alpherakii, Christ. Iris, vi. p. 91 (1893).

♂. Head and thorax brown mixed with grey; tegulæ with the basal half yellowish white, with a line of blackish scales near base; abdomen grey-brown. Fore wing brown, largely suffused and irrorated with fuscous; the costal area yellowish white slightly irrorated with dark brown to beyond middle, the inner area irrorated with white; the veins streaked with pure white except towards termen; the interspaces between veins 9 and 11 and above bases of veins 6 and 7 pinkish; the antemedial line represented by a curved black line with brown on its inner side between the cell and vein 1; claviform with its extremity defined by black; orbicular and reniform with brownish centres and white and pink annuli defined by black, the former small, round; the postmedial line dentate, obsolete towards costa, angled inwards in discal fold, excurved to vein 4, then incurved; the subterminal line represented by a series of dentate black marks interrupted between veins 6, 7; a terminal black line. Hind wing yellowish white suffused with brown, especially towards termen; cilia yellowish white, with brown line near base; the underside whitish, the costal and terminal areas irrorated with brown, a dark discoidal point, and some points on termen.

Hab. Mongolia, Uliassutai Mts., 1 ♂, Changai Mts.; Tibet, Amdo; E. Siberia. *Exp.* 36 millim.

563. Euxoa flavicollis. (Plate LXVII. fig. 8.)

Agrotis flavicollis, Smith, Pr. U.S. Nat. Mus. x. p. 456 (1887); id. Cat. N. Am. Noct. p. 90.

♂. Head and thorax black-brown; palpi and metathoracic crest with some grey; tegulæ with the basal half yellow tinged with rufous; pectus and legs fuscous and grey, the tarsi with pale rings; abdomen grey, the anal tuft and ventral surface tinged with rufous. Fore wing black-brown, the costal area to postmedial line yellow tinged with rufous, the terminal area slightly irrorated with grey; the median nervure streaked with white; the antemedial line black, defined by brownish on inner side, obsolete on costal area, angled inwards on median nervure and vein 1 and strongly outwards above inner margin; claviform large, defined by black, with an ochreous streak from it to subterminal line; orbicular and reniform grey defined by black, and with some fuscous at centre, the former small, oblique, elliptical, the cell before and between the stigmata deep black; the postmedial line minutely dentate, slightly bent outwards below costa, angled inwards in discal fold and oblique below vein 4, veins 3, 4, and 6 defined by dentate reddish-yellow marks from it to subterminal line, which is pale, minutely waved, angled outwards at vein 7 and middle; some pale points on

costa towards apex; a terminal series of black points; cilia fuscous and grey. Hind wing whitish, the veins and terminal area broadly suffused with fuscous brown; the cilia white, with a brownish line at base; the underside white, the costal and terminal areas irrorated with brown, a slight discoidal point.

♀. Basal half of tegulæ, costal and postmedial markings of fore wing grey; hind wing more suffused with brown.

Hab. Canada, Manitoba, Brandon, 1 ♂; U.S.A., Montana, Colorado, Arizona. *Exp.* 36 millim.

564. Euxoa manethusa.

Agrotis manethusa, Druce, Biol. Centr.-Am., Het. i. p. 284, pl. 27. f. 9 (1889).

Head and thorax dark purple-brown mixed with black; metathoracic crest pale; abdomen pale, dorsally tinged with fuscous, ventrally irrorated with black, the anal tuft fulvous; a lateral series of blackish spots. Fore wing purplish fuscous; the costal area whitish to the postmedial line, the veins on it defined by brown; a black streak below base of cell; the antemedial line double, black, on costal area represented by two striæ, then filled in with luteous and angled inwards on median nervure and vein 1; claviform black; orbicular and reniform pale rufous defined by black, and with more or less white annuli, the former small, round, the latter produced at upper extremity; the cell before and between them black, and the reniform connected by black streaks with the postmedial line, which is double, black, filled in with luteous, minutely dentate, bent outwards below costa, slightly incurved in discal fold and incurved below vein 4; the subterminal line indistinct, dentate, angled outwards at vein 7, incurved in discal and submedian folds and with black streaks crossing it between veins 4 and 6; a terminal series of small black spots; cilia ochreous, with two brown lines through them. Hind wing semihyaline white, tinged with brown towards margins; the veins brown; cilia whitish, with a brown line through them; the underside with the costal area irrorated with brown, a postmedial series of brown striæ on the veins.

Hab. Mexico City (*Hoege*), 2 ♀ type, Durango (*Becker*), 1 ♂, Godman-Salvin Coll. *Exp.* 42 millim.

565. Euxoa acclivis.

Agrotis acclivis, Morr. Ann. Lyc. Nat. Hist. N. Y. xi. p. 93 (1875); Smith, Cat. Noct. N. Am. p. 79.
Agrotis opaca, Harv. Bull. Buff. Soc. Nat. Sci. iii. p. 72, pl. 3. f. 1 (1875).

♂. Head and thorax dark brown mixed with grey and ochreous; thorax ochreous and rufous, with dark stripes on upper edge of patagia, the scales being tipped with grey; pectus ochreous and dark brown; the legs dark brown, with ochreous rings on tarsal joints. Fore wing fuscous brown, with broad ochreous fascia on costal area to end of cell, at base extending to submedian fold,

slightly suffused with rufous and with rufous streaks on it in the interspaces; subbasal line obsolete; the antemedial line indistinct on costal area, where it is angled outwards below costa and in cell, below the cell double and sinuous; claviform small, outlined with black; orbicular and reniform small, ochreous and rufous, the former rather diamond-shaped, the latter with the centre defined by rufous and with two black streaks from it to the postmedial

Fig. 63.—*Euxoa accivis*, ♂. ½.

line, which is minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; the terminal area with slight rufous streaks in the interspaces from below costa to vein 3; a subterminal series of small dentate ochreous marks; cilia chequered ochreous and black. Hind wing ochreous white, the veins streaked with brown, the terminal area tinged with brown; the underside with the costal area irrorated with brown.

Hab. U.S.A., N. York?, Texas, Colorado, 1 ♂, type *opaca*, Arizona. *Exp.* 30 millim.

*566. Euxoa albicosta.

Agrotis albicosta, Smith, Pr. U.S. Nat. Mus. x. p. 454 (1887); id. Cat. Noct. N. Am. p. 80.

Very dark fuscous brown; thorax with a slight purplish tinge. Fore wing with a black streak below base of cell; the costal area reddish clay-yellow; the veins more or less prominently dark-streaked; antemedial line faintly indicated between median nervure and vein 1; orbicular and reniform reddish clay-yellow, the former small, round, with a dark point at centre, the latter with a paler yellow annulus; cell black before and between the stigmata; postmedial line obsolete; subterminal line represented by a few indefinite dark marks at middle. Hind wing pearly white, with the terminal area fuscous.

Hab. U.S.A., Colorado foot-hills, New Mexico, Arizona. *Exp.* 32–42 millim. This species is unknown to me.

567. Euxoa proclivis. (Plate LXVII. fig. 9.)

Agrotis proclivis, Smith, Pr. U.S. Nat. Mus. x. p. 453 (1887); id. Cat. Noct. N. Am. p. 79.
Agrotis oaxacana, Schaus, J. N. Y. Ent. Soc. vi. p. 107 (1898).
Agrotis obelisca, Druce, Biol. Centr.-Am., Het. i. p. 283 (part), nec Schiff.

Head blackish; thorax grey-brown mixed with black; tarsi

blackish with pale rings; abdomen grey suffused with fuscous. Fore wing reddish brown mixed with fuscous brown and suffused with fuscous black except the basal area, the costal area to postmedial line, and the terminal area except towards apex; the subbasal line represented by double black striæ from costa; the antemedial line indistinct, represented by double black striæ from costa and double oblique black striæ from submedian fold to vein 1; claviform small, obscurely defined by black; orbicular and reniform small, indistinct, with slight pale annuli, the former produced to a point on outer side almost confluent with the latter; the postmedial line black, defined by paler fuscous on outer side, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line represented by a series of short whitish streaks in the interspaces, incurved at discal fold, where there is a short black streak before the one above vein 5, and a black streak extending to lower angle of cell above vein 4; a terminal series of black points; cilia reddish brown intersected with blackish. Hind wing pale fuscous brown, the terminal half deep fuscous; cilia white; underside whitish, the costal area and terminal half suffused with fuscous, a small discoidal spot and sinuous postmedial line.

Hab. U.S.A., Arizona, 1 ♀; Mexico, Oaxaca, type† ♀ in Coll. Schaus, Durango (*Becker*), 1 ♂, Godman-Salvin Coll. *Exp.* 36 millim.

568. Euxoa fumicolor. (Plate LXVII. fig. 10.)

Agrotis fumicolor, Hmpsn. Ann. S. Afr. Mus. ii. p. 74 (1902).

Head rufous; palpi with some fuscous at sides; thorax fuscous, the tegulæ with black and rufous medial band; abdomen ochreous strongly irrorated with fuscous, the anal tuft tinged with rufous. Fore wing purplish brown, with traces of markings indicated by black scales; traces of waved subbasal and antemedial lines; traces of the orbicular and reniform stigmata, of a waved postmedial line bent outwards below costa, and of a waved subterminal line; some pale points on costa towards apex and a terminal series of black points. Hind wing semihyaline white; the veins brownish; a slight discoidal point; a postmedial series of points on the veins; the costal and terminal areas slightly irrorated with fuscous.

Hab. Mashonaland, Salisbury (*Marshall*), 2 ♂, 1 ♀ type. *Exp.* 28 millim.

569. Euxoa apicalis. (Plate LXVII. fig. 11.)

Agrotis apicalis, Grote, Bull. Geol. Surv. vi. p. 153 (1880); Smith, Cat. Noct. N. Am. p. 80.

♀. Head and thorax fuscous brown; palpi fringed with rufous; tegulæ with black medial line; thorax pale rufous; legs marked with blackish above; abdomen pale grey-brown irrorated with dark brown. Fore wing pale reddish brown, the veins slightly streaked with black; subbasal and antemedial lines black, double, waved,

and bent inwards to costa; orbicular and reniform small, very faintly defined by darker brown lines; the postmedial line double, black, nearly erect from costa to vein 4, where it is angled outwards, then oblique; the apical area suffused with purplish fuscous to below vein 5; the interspaces of terminal area with slight dark streaks. Hind wing brown; the veins rather darker; cilia pale, with a brown line at base; the underside with the disk whitish.

Hab. U.S.A., Colorado, New Mexico, Arizona (*Prescott*). *Exp.* 34 millim.

*570. Euxoa cleiducha. (Plate LXVII. fig. 12.)

Pleonectopoda cleiducha, Dognin, Le Nat. 1902, p. 121.

♂. Head and thorax dull greyish brown; palpi blackish at sides; abdomen pale brown, greyish at base and on ventral surface. Fore wing dull brown, the outer half of inner area and terminal area greyish irrorated with brown; the subbasal line represented by double black striæ from costa and cell; the antemedial line double, dentate below costa and in cell and obsolete below vein 1; orbicular and reniform dull brown with grey annuli, the former rounded, open above, the cell before and between them and below the orbicular black; the postmedial line double, strongly bent outwards below costa, then obsolescent, somewhat dentate, excurved to vein 4, then oblique; the subterminal line greyish, angled outwards at vein 7 and excurved at middle, defined on inner side by a dark patch at costa, then by small brown spots; a terminal series of black points. Hind wing semihyaline white, the apex and termen slightly tinged with fuscous; the underside with the costal area irrorated with brown.

Hab. Ecuador, Loja, type † ♂ in Coll. Dognin. *Exp.* 32 millim.

*571. Euxoa marcida. (Plate LXXIII. fig. 1.)

Agrotis marcida, Christ. Iris, vi. p. 90 (1893); Staud. Cat. Lep. pal. p. 136.

Head and thorax grey mixed with fuscous and a few black scales; the tegulæ and metathoracic crest more or less tinged with rufous; palpi blackish at sides; tarsi black, with pale rings; abdomen grey, the anal tuft tinged with rufous. Fore wing grey, thickly irrorated and suffused with fuscous and tinged with reddish brown, especially on postmedial area; the subbasal line black, angled outwards below costa; the antemedial line double, distinctly so at costa, angled outwards below costa, then slightly waved; claviform rather small, defined by black and with blackish streak above and beyond it; orbicular and reniform grey defined by black, the former oblique, elliptical, open above, the latter narrow and with fuscous centre, the cell before and between the stigmata filled in with black-brown; an irregular medial line from cell to inner margin; the postmedial line double, minutely waved, with double black striæ at costa, bent outwards below costa, excurved to vein 4,

then oblique, some pale points beyond it on costa; the subterminal line grey, defined by fuscous suffusion on inner side, most prominent towards costa, angled outwards at vein 7 and excurved at middle; a terminal series of minute black lunules; a grey line at base of cilia. Hind wing grey suffused with fuscous; the cilia whitish, with a brown line through them; the underside whitish, the costal and terminal areas irrorated with brown, a discoidal point.

Hab. Persia, Aschabad, in Coll. Püngeler. *Exp.* 32 millim.

572. Euxoa t-nigrum. (Plate LXXIII. fig. 2.)

Orthodes t-nigrum, Guen. Noct. i. p. 372 (1852).

♂. Head and thorax brownish ochreous, irrorated with a few black scales; palpi with black patch at sides; abdomen ochreous, dorsally tinged with fuscous, the anal tuft with a rufous tinge. Fore wing ochreous, tinged with brown and sparsely irrorated with brown and black scales; the costal area to median nervure and subterminal line paler; a small black spot in middle of cell; a black streak above median nervure from before middle of cell to a point at middle of vein 4, conjoined to a discoidal lunule and forming a harpoon-shaped mark; subterminal line very ill-defined, blackish, defined on costal half by the pale area before it, oblique from apex to vein 7, where it is sharply angled outwards, then again oblique to extremity of streak on vein 4; a terminal series of black points. Hind wing whitish, the veins brown, the costal and inner areas tinged with brown; the underside with slight discoidal point, and postmedial and terminal series from costa to vein 2.

Hab. Brazil, New Fribourg, Petropolis (*Doer*), 1 ♂. *Exp.* 42 millim.

*573. Euxoa abnormis. (Plate LXVII. fig. 13.)

Agrotis abnormis, Smith, Trans. Am. Ent. Soc. xvii. p. 41 (1890); id. Cat. Noct. N. Am. p. 79.

Carneous grey shaded and suffused with reddish; palpi brown at sides; tegulæ with a blackish band at base. Fore wing with the subbasal line double, black, dentate; antemedial line double, the inner line indistinct, brown or blackish, the included area pale in dark specimens, erect, angled outwards below costa and cell and above inner margin; claviform faintly defined by dark scales; orbicular moderate, elliptical, oblique, pale in the dark specimens, defined by black, sometimes incompletely on inner side; reniform with leaden grey centre, darker below, with grey annulus narrowly defined by black; postmedial line single or with double spots at costa, bent outwards below costa, excurved to vein 4, then incurved; subterminal line somewhat paler, angled outwards at vein 7 and excurved at middle, defined on inner side by a dark shade, prominent in the paler specimens; a fine interrupted dark terminal line. Hind wing dirty grey-brown, paler in male; a discoidal

spot; the underside with darker irroration, a discoidal spot and postmedial line.

Hab. U.S.A., California, Sierra Nevada (*McGlashan*). *Exp.* 34–37 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

574. Euxoa pronycta, n. sp. (Plate LXVII. fig. 14.)

♂. Head and thorax yellow-brown mixed with white-tipped black hairs, the thorax tinged with purplish red; tibiæ and tarsi blackish ringed with ochreous; abdomen ochreous irrorated with brown, the anal tuft fulvous. Fore wing ochreous or greyish, irrorated and striated with fuscous, the costal area darker; an indistinct double, waved, subbasal line from costa to submedian fold; an indistinct double, waved, antemedial line; orbicular represented by a small black spot; reniform moderate, black; the postmedial line represented by a series of black points on the veins, excurved from costa to vein 4, then oblique; indistinct subterminal and terminal series. Hind wing semihyaline white, the costal area tinged with fuscous.

Hab. Mashonaland, Salisbury (*Marshall*), 1 ♂ type, Umtali (*Marshall*), 1 ♂. *Exp.* 32 millim.

575. Euxoa reclusa. (Plate LXVII. fig. 15.)

Graphiphora reclusa, Wlk. x. 403 (1856).

♂. Head and tegulæ red-brown mixed with grey; palpi black at sides, in front and at extremity and lower part of frons whitish; thorax grey; abdomen grey irrorated with fuscous. Fore wing reddish brown, irrorated and striated with fuscous; the subbasal line represented by dark striæ from costa and cell; the antemedial line indistinct, double, waved, with dark points at costa and submedian fold; orbicular and reniform with fuscous centres and their annuli defined by brown, the former indistinct, round; the postmedial line indistinct, minutely waved, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line defined by fuscous on inner side, slight except towards costa, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing fuscous brown, the interspaces whitish towards base; cilia whitish, with brown line through them; the underside white, a black discoidal lunule, the apical area with somewhat diffused black patch extending to vein 2.

♀. Head and tegulæ less red.

Hab. Australia, 3 ♂, 1 ♀ type; S. Australia, Gisborne (*Lower*), 1 ♀. *Exp.* 34–40 millim.

576. Euxoa indigna. (Plate LXVII. fig. 16.)

Apamea indigna, Herr.-Schäff. Ausser. Eur. Schmett. f. 130 (1850).
Agrotis dividens, Wlk. x. 342 (1856).
Axylia intendens, Wlk. xi. 717 (1857).

Head and thorax rufous mixed with black or entirely suffused

with black; tegulæ with deep black medial line; abdomen ochreous suffused with black. Fore wing ochreous tinged with rufous, or rufous more or less irrorated with black, the costal area suffused with black to near apex; the subbasal line represented by slight striæ from costa and cell; antemedial line double, waved, sometimes strongly angled inwards on vein 1 and outwards above inner margin; claviform minute, indistinctly defined by black; orbicular small, round, with pale annulus defined by black and usually with black centre; reniform defined by black and filled in with fuscous; the cell between the stigmata more or less suffused with black; the postmedial line indistinct, double, dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; subterminal line only defined by the area beyond it being more or less suffused with fuscous, angled inwards in discal and submedian folds and bent outwards to apex and tornus. Hind wing yellowish white, the costal and terminal areas tinged with fuscous in female; the underside with more or less developed discoidal point and postmedial series on the veins.

Hab. Br. E. Africa, Athi R., 1 ♂, Naitolia, 1 ♂, Eb Urru (*Betton*), 2 ♀; Natal (*Kraus*), 1 ♂, type *dividens*, Karkloof (*Marshall*), 1 ♀; Cape Colony, Grahamstown, 1 ♂, Annshaw (*Miss F. Barrett*), 2 ♂, 1 ♀, Transkei, 1 ♀ (*Drège*), 1 ♂ type *intendens*. *Exp.* 32–36 millim.

577. Euxoa epipyria, n. sp. (Plate LXVII. fig. 17.)

Head and thorax ochreous to purplish red mixed with black; tibiæ and tarsi black, ringed with ochreous white; abdomen fuscous, with grey segmental rings, the ventral surface ochreous irrorated with black. Fore wing ochreous, more or less completely suffused with purplish red; the costal area suffused with black; the subbasal line represented by double striæ from costa filled in with whitish; the subcostal and median nervures defined by fine whitish streaks to antemedial line, which is indistinct and very strongly dentate outwards in cell, submedian fold, and above inner margin; orbicular and reniform small, with slight ochreous annuli defined by black, the former round, the latter filled in with black; an oblique waved shade from lower angle of cell to inner margin; the veins and interspaces of terminal half streaked with rufous; the postmedial line indistinct, double, dentate, and produced to points on the veins, bent outwards below costa, strongly excurved to vein 4, then incurved; a terminal series of black points. Hind wing semihyaline white; the underside with the costal area irrorated with fuscous, traces of a discoidal point and postmedial series on the veins.

Hab. Br. E. Africa, Athi-ya-Mawe (*Betton*), 1 ♀; Mashonaland, Salisbury (*Marshall*), 1 ♂, 1 ♀ type. *Exp.* 30–32 millim.

*578. Euxoa hirtipalpis. (Plate LXVII. fig. 18.)

Agrotis hirtipalpis, Wlk. xi. 739 (1857).
? *Agrotis præstans*, Mssn. Stübel's Reise, p. 143, pl. 6. f. 16 (1890).

♂. Head and thorax dark red-brown; tarsi with pale rings; abdomen grey-brown. Fore wing rufous irrorated with grey; an indistinct waved subbasal line from costa to submedian fold defined by grey on outer side; an oblique waved antemedial line angled outwards below costa and defined by grey on inner side; orbicular and reniform very indistinctly defined by grey; an indistinct curved waved medial line; postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; no trace of subterminal line. Hind wing semihyaline white, the veins and terminal line brownish; the underside with the costal area irrorated with brown and tinged with rufous, a small discoidal spot, an indistinct postmedial line with short streaks on the veins.

Hab. Colombia, Bogotá, type † ♂ in Mus. Oxon. *Exp.* 48 millim.

*579. Euxoa eremicola. (Plate LXIX. fig. 21.)

Agrotis eremicola, Stndf. Iris, i. p. 217, pl. 10. ff. 7, 8 (1888); Staud. Cat. Lep. pal. p. 146.

♂. Head and thorax pale ochreous slightly irrorated with fuscous; palpi with black patch at side of 2nd joint; tarsi black with pale rings; abdomen white, dorsally irrorated with brown. Fore wing pale ochreous slightly irrorated with fuscous; the subbasal line represented by a black striga from costa; antemedial line strong, slightly waved, nearly erect; claviform obsolete; orbicular and reniform indistinct, pale, with square black spot between them; a medial striga on costa and an indistinct line from lower angle of cell to inner margin; postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line pale, dentate, angled outwards at vein 7 and excurved at middle, defined on inner side by black suffusion, the area beyond it suffused with black; a terminal series of black points; cilia fuscous, with an ochreous line at base. Hind wing pure white, the cilia brown from apex to vein 2. Underside pure white; fore wing with fuscous terminal band from costa to vein 2; hind wing with the termen tinged with fuscous towards apex.

Hab. W. Turkestan, Kirghistan, Alexander Mts., in Coll. Püngeler. *Exp.* 42 millim.

580. Euxoa cirghisa.

Agrotis vallesiaca, Frr. Beitr. Eur. Schmett. p. 109, pl. 351. ff. 3, 4 (1842), *nec* Boisd.
Agrotis kirghisa, Ev. Bull. Mosc. 1856, ii. p. 219, pl. i. f. 7, *a*, *b*; Staud. Cat. Lep. pal. p. 146.
Agrotis squalorum, Ev. Bull. Mosc. ii. p. 22 (1856); Stndf. Iris, i. p. 218, pl. 10. f. 9; Staud. Cat. Lep. pal. p. 146.
Agrotis squalidior, Staud. Cat. Lep. pal. p. 146.

Head and thorax very pale red-brown mixed with black; tegulæ

with medial blackish line; tarsi banded with black; abdomen whitish tinged with red-brown. Fore wing pale red-brown strongly irrorated with black; a waved subbasal black line from costa to submedian fold, a black spot on costa between it and the antemedial line, which arises from a costal spot, is angled inwards in cell and on vein 1 and outwards in submedian fold and above inner margin; claviform with its extremity slightly defined by black; orbicular and reniform defined by black, the former somewhat elliptical, a waved medial shade passing between them; the postmedial line dentate, bent outwards below costa, slightly angled inwards in discal fold and incurved below vein 4; subterminal line indistinct, pale, minutely dentate, angled outwards at vein 7 and excurved at middle, defined on inner side by a series of dentate black marks and with blackish suffusion beyond it; a terminal series of black points. Hind wing white, the veins and the terminal area tinged with brown; in female wholly suffused with brown. Underside white, the terminal area of fore wing suffused with fuscous, of hind wing towards costa only.

Ab. 1. *squalidior*. Rather paler; fore wing brownish grey, the markings more distinct; hind wing with the terminal area brownish in male.—Taurus; Persia.

Ab. 2. *squalorum*. Hind wing of male with the veins only tinged with brown, and in the female the terminal area.

Hab. S.E. Russia; Armenia; Syria, 1 ♂, 1 ♀; Persia, 1 ♂, 1 ♀; W. Turkestan, Kirghistan, Issyk-kul, 1 ♂, Alexander Mts., 1 ♂, 1 ♀; W. Siberia, Altai; E. Turkestan, Ili; Kashmir, Dras (*Leech*), 1 ♀. *Exp.* 36–40 millim.

581. Euxoa clara.

Agrotis clara, Staud. Stett. ent. Zeit. 1888, p. 4; id. Cat. Lep. pal. p. 145.
Agrotis celebrata, Alph. Rom. Mém. ix. p. 209, pl. 8. f. 8 (1897); Staud. Cat. Lep. pal. p. 146.
Agrotis verecunda, Püng. Soc. Ent. xiii. p. 58 (1898); Staud. Cat. Lep. pal. p. 146.

Head and thorax ochreous white; palpi black except at tips; tarsi banded with black; abdomen ochreous white irrorated with fuscous. Fore wing ochreous white irrorated with fuscous; a waved blackish subbasal line from costa to submedian fold; a waved blackish antemedial line arising from a small costal spot; a waved medial line angled outwards at lower angle of cell; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; an obscure diffused subterminal line angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing ochreous white, tinged with fuscous especially on terminal half; cilia white; the underside white, with discoidal point and curved postmedial line.

Ab. 1. *celebrata*. Rather darker; fore wing with the markings more prominent.

Ab. 2. *verecunda*. Paler and with less dark irroration.

Hab. W. Turkestan, Turcomania, Issyk-kul, 3 ♂, 1 ♀; E. Turkestan, Kuldja, 1 ♂, Aksu, 1 ♂, 1 ♀. *Exp.* 40–44 millim.

582. Euxoa ignara. (Plate LXIX. fig. 18.)

Agrotis ignobilis, Staud. Iris, viii. p. 354, pl. 6. f. 2 (1895), *nec* Staud. 1888.
Agrotis ignara, Staud. Iris, ix. p. 248 (1896); id. Cat. Lep. pal. p. 145.

♂. Head and thorax pale brown irrorated with fuscous; palpi black except at tips; tarsi banded with black; abdomen ochreous brown irrorated with black. Fore wing pale reddish brown, thickly irrorated with black; the subbasal line represented by small black spots below costa and cell; the antemedial line arising from a small spot on costa, then waved; a waved medial line angled outwards at lower angle of cell and arising from a small costal spot; the postmedial line somewhat dentate, arising from a small spot on costa, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line indistinct, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing fuscous brown, the cilia pale ochreous; the underside pale irrorated with dark brown, a dark discoidal spot and curved postmedial line.

Hab. Mongolia, Uliassutai Mts., 1 ♂. *Exp.* 36 millim.

583. Euxoa singularis.

Orbifrons singularis, Staud. Stett. ent. Zeit. xxxviii. p. 187 (1877); Christ. Rom. Mém. ii. p. 166, pl. 6. f. 1; Staud. Cat. Lep. pal. p. 146.

♂. Head and thorax ochreous white; palpi blackish at sides except at tips; tarsi banded with black; abdomen ochreous white, the dorsum slightly tinged with fuscous. Fore wing ochreous white irrorated with pale brown; the subbasal line represented by a slight black striga from costa; a strong, somewhat sinuous black antemedial line slightly angled outwards in submedian fold; orbicular and reniform very incompletely defined by black, the former rounded; the postmedial line represented by blackish spots on costa and inner margin; subterminal line indistinct, irregularly dentate, angled outwards at vein 7 and excurved at middle, defined on inner side at costa by a blackish patch, then slightly by black; some black striæ on termen. Hind wing ochreous white, tinged with fuscous towards termen.

Hab. Palestine, 1 ♂; W. Turkestan, Turcomania. *Exp.* 36 millim.

Larva. Pale ochreous, striated and irrorated with reddish brown; thoracic shield brown, with whitish dorsal and lateral lines; dorsal line indistinct, double; subdorsal line indistinct; lateral fascia broad, with the black stigmata on its lower edge.

584. Euxoa amœna. (Plate LXVII. fig. 19.)

Agrotis amœna, Staud. Iris, iv. p. 267 (1891); id. Cat. Lep. pal. p. 145.

♂. Pale ochreous; palpi blackish at sides except at tips; tarsi

banded with brown. Fore wing slightly irrorated with brown; subbasal line very indistinct from costa to submedian fold; antemedial line indistinct, brownish, almost evenly curved; orbicular and reniform very indistinct, slightly defined by brown; postmedial line indistinct, brownish, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line only defined by slight brownish suffusion on inner side, angled outwards at vein 7 and excurved at middle. Hind wing white; the underside with the costal area slightly irrorated with brown.

Hab. Armenia, 1 ♂; Asia Minor, Pontus; W. Turkestan, Sarawschan. *Exp.* 40 millim.

585. **Euxoa peperida**, n. sp. (Plate LXVII. fig. 20.)

Head and thorax grey-white pencilled with brown; palpi blackish at sides except at tips; tegulæ with medial black line; abdomen brownish grey. Fore wing grey-white irrorated with black; a rufous shade in, beyond, and below end of cell; the subbasal line represented by points on costa and median nervure; the antemedial line indistinct, waved, with more prominent points on costa, median nervure, and vein 1; hardly a trace of orbicular or reniform; a slight fuscous shade at lower angle of cell; the postmedial line indistinct, dentate, with more prominent points on the veins, bent outwards below costa, excurved to vein 4, then incurved; subterminal line hardly defined by a very slight shade on inner side; a terminal series of indistinct dark points. Hind wing white, the veins, inner and terminal areas suffused with brown; the underside white, the costal area irrorated with brown, a postmedial series of minute points on the veins.

Hab. Kashmir, Goorais Valley (*Leech*), 1 ♂, 2 ♀ type. *Exp.* 42 millim.

586. **Euxoa opisoleuca.** (Plate LXVII. fig. 21.)

Agrotis opisoleuca, Staud. Stett. ent. Zeit. 1881, p. 423; id. Cat. Lep. pal. p. 136.

Head and thorax pale brown; abdomen whitish. Fore wing pale brown irrorated with fuscous; an indistinct dark subbasal line from costa to submedian fold, excurved below costa; a waved antemedial line; orbicular and reniform defined by black and with slight pale annuli, the former round; traces of a dark medial shade; the postmedial line irregularly dentate, bent outwards below costa, excurved to vein 4, then incurved; an indistinct pale subterminal line defined by fuscous suffusion on inner side, angled outwards at vein 7 and excurved at middle; a fine ochreous subterminal line. Hind wing ochreous white, the veins brownish; traces of a subterminal band especially towards tornus.

Ab. 1. Fore wing with the markings almost obsolete.

Hab. N. Persia, 1 ♂, 1 ♀, Schahkuk, Kurusch. *Exp.* 42–44 millim.

587. Euxoa forcipula.

Noctua forcipula, Schiff. Wien. Verz. p. 78 (1776); Hübn. Samml. Eur. Schmett., Noct. f. 547; Godt. Lép. Fr. ii. p. 228, pl. 66. f. 1; Staud. Cat. Lep. pal. p. 146.
Agrotis denticulosa, Esp. Schmett. iv. pl. 183. f. 3 (1777).
Agrotis bornicensis, Fuchs, Stett. ent. Zeit. 1884, p. 260.
Agrotis nigrescens, Höfm. Soc. Ent. ii. p. 121 (1888).

Head and thorax dull brown mixed with grey; antennæ ringed with black; tegulæ with black medial line, patagia edged with blackish above; tarsi blackish ringed with white; abdomen grey-brown. Fore wing grey-brown irrorated with white; an indistinct waved subbasal line from costa to submedian fold; a waved antemedial line; claviform defined by blackish; orbicular and reniform with whitish annuli defined by black, the former rounded; the postmedial line minutely dentate, excurved from costa to vein 4, then incurved; the subterminal line very indistinct, represented by a series of ochreous points and slight wedge-shaped black marks, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pale, more or less completely suffused with reddish brown; cilia whitish, with brown line at base; the underside whitish, the costal area irrorated with brown, the terminal area suffused with brown.

Ab. 1. *bornicensis*. Larger and darker.

Ab. 2. *nigrescens*. Much darker.

Hab. France, Sand Coll.; Germany, Zeller Coll.; Switzerland, Frey Coll.; Spain, Tragacete (*Chapman*), 1 ♀; Sicily; Armenia, Caucasus; Asia Minor, 1 ♂, 1 ♀, Pontus, Taurus; Syria, Leech Coll.; Persia; W. Turkestan, Turcomania. *Exp.* 38–42 millim.

588. Euxoa exacta. (Plate LXVII. fig. 22.)

Agrotis exacta, Staud. Stett. ent. Zeit. 1888, p. 9; id. Cat. Lep. pal. p. 141.

♂. Head and thorax grey mixed with dark brown and black; palpi blackish at sides; tegulæ with blackish medial line; tarsi blackish, with pale rings; abdomen grey irrorated with dark brown, the anal tuft tinged with ochreous. Fore wing grey irrorated with brown and black; the veins with slight blackish streaks; the subbasal line double, waved, from costa to submedian fold; the antemedial line double, waved, and excurved above inner margin; claviform whitish, defined by black; orbicular and reniform with whitish annuli defined by black, the former produced to a point on inner side, the cell between them slightly tinged with black; the postmedial line somewhat dentate, defined by whitish on outer side, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line greyish, with slight fuscous dentate marks on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules. Hind wing pale fuscous brown; the cilia white, with a brown line at base; the underside

whitish, the costal and terminal areas irrorated with brown; a curved postmedial line and terminal series of black points.

Hab. W. Turkestan, Issyk-kul, 3 ♂; E. Turkestan, Ili. *Exp.* 40 millim.

589. Euxoa glaucescens.

Agrotis glaucescens, Christ. Stett. ent. Zeit. 1887, p. 163; id. Rom. Mém. v. p. 23, pl. i. f. 9; Staud. Cat. Lep. pal. p. 141.

Head and thorax white mixed with ochreous brown; tarsi banded with black; abdomen ochreous irrorated with brown. Fore wing ochreous brown, largely mixed with white; the subbasal line represented by a double striga from costa, filled in with ochreous; a fine black streak below base of cell; the antemedial line ill-defined, with double black striæ at costa and strongly angled outwards above inner margin; claviform white, defined by black; orbicular and reniform with brown centres and white annuli defined by black, the former small, more or less produced to a point on outer side, the latter angled inwards on median nervure; postmedial line defined by ochreous white on outer side, bent outwards below costa, excurved to vein 4, then incurved and angled outwards on vein 1; the subterminal line pale, angled outwards at vein 7 and dentate at veins 3, 4; a terminal series of black points. Hind wing white, tinged with ochreous brown especially on terminal area; the cilia white; the underside with the costal area irrorated with brown, a slight discoidal point and sinuous postmedial line.

Hab. E. Turkestan, Ili, 1 ♂, 1 ♀. *Exp.* 34–36 millim.

590. Euxoa turbans. (Plate LXVII. fig. 23.)

Agrotis turbans, Staud. Stett. ent. Zeit. 1888, p. 10; id. Cat. Lep. pal. p. 146.

Head and thorax pale reddish brown mixed with grey and black; palpi black at sides, except at tips; tegulæ with black medial line; tarsi ringed with black; abdomen grey-brown. Fore wing pale brown, with a reddish tinge and slightly suffused with fuscous, the veins strongly streaked with black; subbasal and antemedial lines only represented by grey and black striæ on costa; a black streak below cell from base to the claviform, which is elongate, acute, and defined by black; orbicular and reniform with brown centres and whitish annuli defined by black, the former very elongate, narrow, the latter narrow and angled inwards on median nervure to origin of vein 2; the subterminal line represented by a series of elongate dentate grey marks on each side of veins, with fuscous dentate marks in interspaces between them extending to the terminal series of small black spots; cilia with a fine pale line at base. Hind wing pale fuscous brown, the cilia whitish with a brown line through them; the underside whitish, the costal and terminal areas irrorated with brown, a small discoidal spot and postmedial series of striæ on the veins.

Hab. W. Turkestan, Sarawschan, Issyk-kul, 1 ♂, 1 ♀. *Exp.* 38 millim.

591. Euxoa signifera.

Noctua signifera, Schiff. Wien. Verz. p. 80 (1776); Fabr. Ent. Syst. iii. 2, p. 71; Hübn. Eur. Schmett., Noct. f. 132; Godt. Lép. Fr. ii. p. 230, pl. 66. f. 3; Staud. Cat. Lep. pal. p. 147.
Agrotis orientis, Alph. Hor. Soc. Ent. Ross. xvii. p. 54 (1882).
Agrotis improcera, Staud. Stett. ent. Zeit. 1888, p. 9.

Head and thorax grey mixed with dark brown or red-brown; tegulæ with black medial line, patagia edged with black scales above; tarsi banded with black; abdomen ochreous or grey irrorated with brown. Fore wing grey-white, suffused and irrorated with dark brown or pale rufous; a black streak below base of cell confluent with the elongate black-defined claviform; the subbasal line represented by double black striæ from costa; the antemedial line waved, double at costa, and angled outwards below costa and above inner margin; orbicular and reniform with brownish centres and whitish annuli defined by black, the former more or less produced to a point on outer side, sometimes confluent with the latter, a black streak in lower part of cell interrupted by the stigmata and continued to the subterminal line; the postmedial line minutely dentate, bent outwards below costa, slightly incurved in discal fold and strongly below vein 4; the subterminal line represented by an obscure series of dentate brownish marks, with a short black streak above vein 6 and the fascia above vein 5; a terminal series of small black lunules; cilia intersected with fuscous. Hind wing white, the veins and a terminal line brownish; the underside with the costal area irrorated with brown, a slight discoidal spot.

Ab. 1. *improcera*. Paler; fore wing with the transverse lines hardly traceable.—Armenia; Syria; Persia; C. Asia.

Ab. 2. *orientis*. Almost unicolorous; the fore wing ashy grey with the dark basal fascia.—Persia, Ili.

Hab. France, Sand Coll.; Germany, Zeller Coll.; Austria, Zeller Coll.; Hungary, Leech Coll.; Switzerland, Frey Coll.; Russia, Sarepta (*Christoph*); Armenia, Caucasus, 2 ♀; Asia Minor, Pontus, Taurus; Syria, Leech Coll.; Persia; W. Turkestan, Khurdistan, Fergana, Issyk-kul; E. Turkestan, Ili; W. Siberia, Altai, 1 ♀.
Exp. 34–40 millim.

592. Euxoa celsicola. (Plate LXVII. fig. 24.)

Agrotis celsicola, Bell. Ann. Soc. Ent. Fr. 1859, p. 190, pl. 5. f. 5; Herr.-Schäff. Neue Schmett. f. 126; Staud. Cat. Lep. pal. p. 147.

Head and thorax red-brown, mixed with black and some white scales; tegulæ with black medial line and tipped with black, patagia edged with black above; tarsi blackish with pale rings; abdomen ochreous brown, the ventral surface irrorated with brown. Fore wing red-brown, with some whitish irroration; the veins with fine black streaks, the interspaces with diffused fuscous streaks; a sinuous black streak in base of submedian fold running into the elongate ochreous black-defined claviform, which is pointed at extremity; orbicular and reniform with brown centres and pale

annuli defined by black, the former produced to a point on inner side, open above, and produced as a streak defined by black below towards base, the latter with the lower part of its annulus pure white; the postmedial line indistinct, dentate, oblique below costa, slightly incurved in discal fold and strongly below vein 4; the subterminal line represented by a series of ochreous points with wedge-shaped black marks defined by ochreous on their inner side, the dentate mark above vein 5 longer and above vein 4 continued to reniform; a terminal series of small black lunules; cilia intersected with fuscous. Hind wing ochreous white, the veins and terminal area suffused with ochreous brown; cilia white, with a brown line at base; the underside with the costal and terminal areas thickly irrorated with brown.

Hab. France, Alps, type † ♂ in Coll. Oberthur; Syria, 5 ♂, 1 ♀, Leech Coll.; Persia; W. Turkestan, Sarawschan. *Exp.* 36–40 millim.

593. Euxoa improba. (Plate LXVII. fig. 25.)

Agrotis improba, Staud. Stett. ent. Zeit. 1888, p. 8; id. Cat. Lep. pal. p. 147.

Head and thorax brown mixed with grey; tegulæ with black medial line; tarsi ringed with black; abdomen grey-brown. Fore wing grey mixed with brown; the subbasal line represented by an oblique striga from costa; the antemedial line represented by an oblique striga from costa, then obsolescent and excurved in interspaces; a sinuous black streak from base below cell to the claviform, which is elongate and defined by black; orbicular and reniform with white annuli defined by black, the former open above, the black line below it produced in cell towards base, produced to a point on outer side, sometimes confluent with the reniform, which is slightly angled inwards on median nervure; postmedial line very ill-defined and produced to long points on the veins, excurved from costa to vein 4, then oblique; the veins of terminal area with slight dark streaks; subterminal line very irregular and formed by strongly dentate grey marks on veins 7, 6, 4, 3, 1, the area beyond it rather darker; a terminal series of black lunules; cilia brown intersected with grey. Hind wing brown; the cilia whitish, with a brown line through them; the underside grey, the costal area and veins irrorated with brown, the terminal area suffused with brown.

Hab. W. Turkestan, Sarawschan, Taschkent, 1 ♂, 1 ♀. *Exp.* 38 millim.

594. Euxoa multicuspis.

Agrotis multicuspis, Ev. Bull. Mosc. 1852, i. p. 152 (1856); Alph. Rom. Mém. vi. p. 27, pl. 2. f. 5; Staud. Cat. Lep. pal. p. 147.
Agrotis spinosa, Staud. Stett. ent. Zeit. 1877, p. 183.
Agrotis spinifera, Christ. Rom. Mém. i. pl. 7. f. 7 (1884), *nec* Hübn.
Agrotis issykula, Staud. Stett. ent. Zeit. 1889, p. 31.

Head and thorax white mixed with pale and dark brown, tegulæ with dark band near tips; tarsi ringed with white; abdomen white

irrorated with brown. Fore wing dull brown, slightly irrorated with white; a white fascia in submedian fold to near postmedial line, slightly defined by dark scales; a slight white streak in cell to the orbicular, which is elongate, with white annulus slightly defined by blackish; reniform small, with white annulus defined by blackish; the postmedial line very indistinct, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line whitish, angled outwards at vein 7 and excurved at middle, with a series of dark dentate marks defined by V-shaped whitish marks, before it; a fine terminal dark line; cilia white and brown. Hind wing pale suffused with fuscous brown; cilia white; the underside white irrorated with brown.

Ab. 1. *issycula*. Paler, the ground-colour of fore wing more ochreous white, the antemedial line visible on inner area, angled inwards on vein 1, then outwards.—Issyk-kul.

Hab. S.E. Russia; Armenia, 2 ♀; Asia Minor 1 ♂, 1 ♀; W. Turkestan, Krasnovodsk, 1 ♂, Zeller Coll., Turcomania, Issyk-kul, 2 ♂, 5 ♀. *Exp.* 38–42 millim.

595. Euxoa æquicuspis. (Plate LXXIII. fig. 3.)

Agrotis æquicuspis, Staud. Iris, xii. p. 365, pl. 6. f. 18 (1895); id. Cat. Lep. pal. p. 147.

Head and thorax white irrorated with dark brown; abdomen white. Fore wing white irrorated with dark brown; the discal and submedian folds slightly tinged with ochreous; a white fascia in submedian fold from base to near postmedial line incompletely defined by black; the orbicular and reniform with white annuli defined by blackish, the former very elongate, its outer edge produced to a point or bidentate, the latter small; the subbasal and antemedial lines represented by dark striæ from costa; faint traces of a dentate postmedial line bent outwards below costa, excurved to vein 4, then incurved; the subterminal line whitish, indistinct, angled outwards at vein 7 and excurved at middle, with a series of dentate dark marks defined by V-shaped white marks on its inner side; a fine dark terminal line; cilia white and brown. Hind wing whitish, suffused with fuscous brown, the cilia white; the underside white irrorated with brown, a small discoidal spot.

Hab. E. Turkestan, Thian Shan Mts.; Mongolia, Kuruk Tag, 1 ♂, 1 ♀. *Exp.* 40 millim.

596. Euxoa lagena. (Plate LXVII. fig. 26.)

Agrotis lagena, Grote, Can. Ent. vii. p. 26 (1875); Smith, Cat. Noct. N. Am. p. 80.

♀. Head and thorax white mixed with brown; 2nd joint of palpi at sides and sides of frons with black marks; tegulæ with black medial line; pectus and legs white, the latter irrorated with brown; abdomen white irrorated with brown. Fore wing whitish, irrorated with brown; the lines obsolete; a sinuous black-brown

streak below the cell from base to vein 2, orbicular and reniform with brownish centres and white annuli defined by black and with some dark brown suffusion in cell between them; the orbicular elongate, pyriform, conjoined or almost conjoined to the inner edge of the reniform; a streak of brownish suffusion from the reniform to termen; the veins of terminal area with dark streaks; a terminal series of dentate brown marks in the interspaces and a series of black points on termen. Hind wing white; the veins and terminal area more or less strongly tinged with brown; the underside with the costal area irrorated with brown; a postmedial series of short streaks on the veins.

Hab. U.S.A., Montana, Colorado, California, Arizona, Utah, Nevada, 2 ♀ type. *Exp.* 40–44 millim.

597. Euxoa albalis. (Plate LXVII. fig. 27.)

Agrotis albalis, Grote, Bull. Geol. Surv. iv. p. 175 (1878); Smith, Cat. Noct. N. Am. p. 80.
Agrotis cloanthoides, Grote, Bull. Geol. Surv. vi. p. 153 (1880).

♀. Head and thorax white mixed with grey-brown; abdomen white, dorsally tinged with brown and ventrally irrorated with brown. Fore wing white, strongly irrorated with grey-brown; the lines obsolete; blackish streaks from base in and below cell; the orbicular represented by an indistinct dentate white mark slightly defined by black; the reniform by a small very indistinct white annulus; the subterminal line represented by three fuscous dentate marks below costa and two on veins 3, 4, with large diffused white patches on their inner sides; cilia chequered fuscous and white. Hind wing white, the veins and terminal area irrorated with grey; the underside with the costal and terminal areas irrorated with grey-brown.

Ab. 1. *cloanthoides*: whiter.

Hab. U.S.A., Colorado, Nevada, 1 ♀ type. *Exp.* 40 millim.

*598. Euxoa aethes.

Agrotis aethes, Mab. Bull. Soc. Philom. (7) ix. p. 62 (1885); id. N. Arch. Mus. (3) i. p. 149, pl. x. f. 7.

♂. Head and thorax ochreous white; tegulæ and patagia edged with black and yellow-brown or rufous; abdomen ochreous white, slightly tinged on dorsum with rufous. Fore wing ochreous white, suffused from before middle to termen with pale yellow-brown or greyish mixed with red and fuscous in and near cell and near middle of termen, leaving the costal area pale to the postmedial line; a black streak in submedian fold from base to the claviform, which is ochreous defined by black, and elongate; orbicular and reniform ochreous defined by black, the former small or moderate, and elliptical, the latter large, open above, and angled inwards on median nervure; postmedial line very indistinct, excurved from costa to vein 4, then incurved; subterminal line blackish, obsolescent except at middle, angled outwards at vein 7 and excurved at middle, in

the dark specimen formed by ochreous points defined on each side by black and with black streaks on the veins before it towards costa; a terminal series of black points; cilia whitish. Hind wing ochreous white suffused with fuscous, paler towards base; cilia whitish; the underside grey-white, with fuscous discoidal spot and terminal band.

Hab. Patagonia, Santa Cruz, type † in Mus. Paris. *Exp.* 34 millim.

599. Euxoa lucipeta.

Noctua lucipeta, Schiff. Wien. Verz. p. 71 (1776); Fabr. Mant. Ins. ii. p. 169 (1787); Esp. Schmett. iv. pl. 120. f. 3; Hübn. Samml. Eur. Schmett., Noct. f. 41; Godt. Lép. Fr. ii. p. 266, pl. 70. f. 3; Boisd. Icones, pl. 80. f. 4; Staud. Cat. Lep. pal. p. 144.

Head and thorax clothed with ochreous hair, becoming fuscous and grey at tips; palpi blackish at sides; abdomen ochreous. Fore wing yellow, overlaid with fuscous grey, the ground-colour appearing as irroration and in the markings; a waved subbasal line from costa to submedian fold; a waved antemedial line angled inwards on the veins; claviform slightly defined by yellow; orbicular and reniform defined by yellow, the former round; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; subterminal line dentate, angled outwards at vein 7 and excurved at middle; cilia yellow and fuscous. Hind wing ochreous brown, rather paler towards base; the cilia whitish at tips; the underside ochreous, irrorated with brown on terminal half.

Hab. France; Germany, Zeller & Leech Colls.; Austria; Hungary, Leech Coll.; Switzerland, Frey Coll.; Italy; Roumania; Asia Minor, Pontus, Taurus. *Exp.* 56 millim.

600. Euxoa pygmæa. (Plate LXVII. fig. 28.)

Agrotis pygmæa, Bang-Haas, ined.

Head and thorax black-brown and grey mixed; tarsi with pale rings; abdomen fuscous. Fore wing fuscous irrorated with grey; a diffused black streak below base of cell; the antemedial line grey; indistinct, waved, oblique; claviform small, narrow, defined by black; orbicular and reniform with whitish annuli defined by black; postmedial line minutely dentate, defined by greyish on outer side, bent outwards below costa, excurved to vein 4, then oblique; a fine white line at base of cilia. Hind wing white, the veins and terminal area tinged with fuscous; cilia white, with a fuscous line through them; the underside with the costal area fuscous, irrorated with grey; a slight discoidal spot.

Hab. W. Turkestan, Syr Darya, 1 ♂, 1 ♀. *Exp.* 34 millim.

601. Euxoa nyctina, n. sp. (Plate LXVII. fig. 29.)

♂. Fuscous brown; head and thorax slightly mixed with grey. Fore wing narrow, the margins subparallel, the apex rounded;

slightly irrorated with fuscous; the subbasal line represented by a few black scales below costa and cell; traces of an antemedial line oblique from costa to submedian fold where it is angled; orbicular and reniform defined by blackish, the former rounded, open above; the postmedial line very indistinct, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line only defined by diffused blackish suffusion on inner side, curved; a fine pale line at base of cilia. Hind wing pale fuscous brown; the underside whitish, the costal and terminal areas irrorated with brown, a diffused, curved postmedial line.

Hab. Kumaon, Ralam Valley 12,000 feet (*Duthie*), 1 ♂ type. *Exp.* 36 millim.

Genus **FELTIA.**

	Type.
Feltia, Wlk. ix. 202 (1856)	*ducens.*

Proboscis fully developed; palpi obliquely upturned, not reaching vertex of head, the 2nd joint fringed with long hair in front; frons with vertical ridge-like prominence; tibiæ strongly spined, the mid and hind tibiæ with tufts of hair on outer side from base. Fore wing short and broad, the apex rounded; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3 and 4 from angle of cell; 5 obsolescent from below middle of discocellulars; 6, 7 from upper angle; male with the claspers simple, hooked.

Sect. I. Antennæ of male with long branches; the spines on fore tibiæ very stout.

A. Fore wing with the inner and terminal areas not reddish.
  a. Fore wing with the median nervure defined by white streaks ..... *gladiaria.*
  b. Fore wing with the median nervure not defined by white streaks.
    a^1. Fore wing without flesh-coloured streaks in discal and submedian folds ..... *venerabilis.*
    b^1. Fore wing with flesh-coloured streaks in discal and submedian folds ..... *milleri.*
B. Fore wing with the inner and terminal areas reddish ..... *circumdata.*

602. Feltia gladiaria.

Agrotis gladiaria, Morr. Proc. Bost. Soc. N. H. xvii. p. 162 (1874); Smith, Cat. Noct. N. Am. p. 82.
Agrotis morrisoniana, Riley, Proc. Bost. Soc. N. H. xvii. p. 286 (1874).

♂. Head and thorax purplish grey mixed with brown; palpi black except at tips; tegulæ and patagia edged with brown, the tegulæ with slight medial line; tibiæ and tarsi banded with black; abdomen grey irrorated with fuscous, the anal tuft tinged with fulvous; a lateral series of black spots. Fore wing pinkish ochreous, suffused with brown and slate-grey in, below, and just beyond cell and on terminal area; the subbasal line represented by an oblique pale striga, defined by black on inner side, from costa, and another from median nervure to vein 1; the antemedial line pale defined by black, acutely angled outwards below costa, then obsolescent to median nervure, below

the cell forming with part of the subbasal line a semicircular mark with pale centre, then acutely angled outwards above inner margin; claviform large, slate-grey defined by black; orbicular very small and rather elongate, with pale annulus defined by black; reniform large, expanding below, slate-grey, with pale annulus defined by black; the postmedial line pale, very indistinct, bent outwards below costa, then with series of small dentate black marks on its inner side; the veins beyond the cell with black streaks, and defined

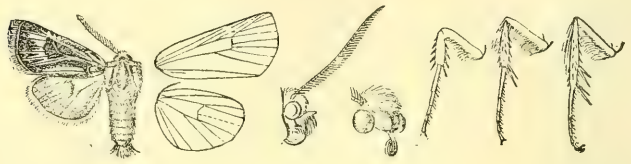


Fig. 64.—*Feltia gladiaria*, ♂. ½.

by whitish streaks on each side; the subterminal line represented by a series of small dentate whitish marks, with larger dentate black marks on their inner side; a terminal series of black points and fine pale line at base of cilia. Hind wing whitish tinged with brown, the veins and terminal area fuscous brown; cilia white with a brown line at base; the underside with blackish discoidal lunule and some fuscous suffusion on apical area.

♀. Hind wing often more uniform fuscous brown.

Hab. Canada (*Norman*), 1 ♀; U.S.A., E. States, 3 ♂, 2 ♀ type *morrisoniana*, Grote Coll., Texas. *Exp.* 34–40 millim.

603. **Feltia venerabilis.** (Plate LXVII. fig. 30.)

Agrotis venerabilis, Wlk. x. 328 (1856); Smith, Cat. Noct. N. Am. p. 83.

♂. Head and thorax dark brown mixed with ochreous and grey; tegulæ blackish at tips; patagia grey-white except at shoulders; tarsi blackish, with pale rings on the joints; abdomen reddish brown. Fore wing grey-brown, suffused with fuscous towards costa or wholly suffused with fuscous, sometimes tinged with pink; the veins with dark streaks; the lines obsolete; a faint semicircular mark below the cell sometimes present, representing part of the subbasal and antemedial lines; the claviform narrow, elongate, blackish defined by black; the orbicular small, elongate, and defined by black; the reniform blackish, partly defined by black and rather ill-defined; a triangular fuscous mark on termen below apex, with traces of small blackish spots or slight streaks in the interspaces above and below it. Hind wing fuscous brown; the cilia pale, with a brown line near base; the underside whiter, with the costal and terminal areas suffused and irrorated with brown; a discoidal point.

♀. Patagia pinkish brown.

Hab. Canada, Orilla (*Bushe*), 2 ♂, Nova Scotia (*Redman*), 3 ♂

type; U.S.A., New York, 2 ♂, 2 ♀, Grote Coll., 1 ♂, 1 ♀, Erie Co. (*Grote*), Texas, Colorado, California (*Walsingham*), 2 ♂. *Exp.* 42 millim.

*604. **Feltia milleri.** (Plate LXVII. fig. 31.)

Agrotis milleri, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 78, pl. 4. f. 4 (1875); Smith, Cat. Noct. N. Am. p. 87.

♂. Head and thorax mixed grey and black, patagia with pale flesh-coloured upper edge; abdomen grey and fuscous mixed. Fore wing grey, thickly irrorated with black; pale flesh-coloured streaks in submedian fold and in discal fold beyond the reniform; a slight black streak in base of cell; the subbasal line represented by a black spot on costa; antemedial line black, nearly straight from costa to vein 1, then strongly bent outwards; claviform defined by black above; orbicular and reniform grey irrorated and defined by black, the former round; a dentate black postmedial line, produced to short streaks on the veins, slightly incurved from below costa to vein 4 and confluent with outer edge of reniform, then oblique; an irregular black subterminal line, strongly angled outwards at vein 7, excurved and dentate at middle; cilia chequered white and blackish. Hind wing fuscous brown; the cilia white, with brownish line through them; underside grey thickly irrorated with black; a slight discoidal spot and diffused dentate postmedial line.

Hab. U.S.A., California, Sierra Nevada, in Coll. Schaus. *Exp.* 38 millim.

*605. **Feltia circumdata.** (Plate LXIX. fig. 14.)

Agrotis circumdata, Grote, A. M. N. H. (5) xi. p. 53 (1883); Smith, Cat. Noct. N. Am. p. 82.

Fuscous black-brown; antennæ yellow; abdomen brownish fuscous. Fore wing with broad yellowish-brown fascia on inner margin confluent with the yellowish-brown terminal area; lines indistinct, double; antemedial line strongly angulate; orbicular and reniform yellowish brown; postmedial line lunulate, sinuous. Hind wing fuscous, with the cilia reddish or purplish; the underside irrorated with reddish, a dark discoidal spot and postmedial line.

Hab. U.S.A., New Mexico. *Exp.* 31–34 millim. This species is unknown to me; figured from a drawing from type in Brooklyn Inst. Arts and Sci.

Sect. II. Antennæ of male bipectinate, with short branches ending in fascicles of cilia.

A. Fore wing with the orbicular stigma **V**-shaped, open above.
  a. Fore wing with dark streaks defining the white subcostal and median nervures ..... *pectinicornis*.
  b. Fore wing without dark streaks defining the white subcostal and median nervures ..... *evanidalis*.
B. Fore wing with the orbicular stigma small, elliptical ... *robustior*.

606. Feltia pectinicornis. (Plate LXVII. fig. 32.)

Feltia pectinicornis, Smith, Bull. U.S. Nat. Mus. 38. no. 114 (1890); id. Cat. Noct. N. Am. p. 82.

♂. Head and thorax pale grey-brown mixed with black; palpi blackish at sides except at extremity; frons with black bar above it; tegulæ with black medial line and the tips blackish; patagia with black line above; tibiæ and tarsi blackish with pale rings; abdomen brownish grey. Fore wing grey suffused with pale brown; the subcostal and medial nervures defined by fine white streaks; the base of submedian interspace blackish; the subbasal line excurved, white defined by black on inner side and ending at vein 1; the antemedial line whitish defined on each side by blackish, angled outwards on subcostal nervure, inwards on median nervure, then oblique and ending at vein 1; claviform elongate, blackish defined by deep black; orbicular and reniform white defined by black, their centres by brown, the former V-shaped, open above, the cell before and between them and beyond reniform blackish; short black streaks above bases of veins 2 and 3; the postmedial line pale defined by fuscous striæ on each side of it, minutely waved, bent outwards below costa to just beyond reniform and incurved below vein 4; the subterminal line indistinct, somewhat dentate, angled outwards at vein 7 and excurved at middle, pale defined by short black streaks before it, above vein 7, and at middle and beyond it in the interspaces; some pale points on costa towards apex. Hind wing whitish suffused with fuscous, except towards inner margin; cilia white; the underside, with the costal and terminal areas, irrorated and slightly suffused with fuscous brown.

Hab. U.S.A., Texas, 2 ♂. *Exp.* 40 millim.

607. Feltia evanidalis.

Agrotis evanidalis, Grote, Bull. Geol. Surv. iv. p. 172 (1878); Smith, Cat. Noct. N. Am. p. 82.

♂. Head and thorax ochreous white, slightly mixed with red-brown; the branches of antennæ brown; femora fuscous above; abdomen ochreous white, tinged with rufous towards extremity.

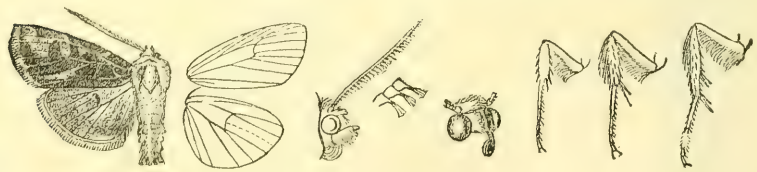


Fig. 65.—*Feltia evanidalis*, ♂. ½.

Fore wing ochreous white, suffused with pale red-brown and purplish grey; the subcostal and median nervures and base of vein 1 streaked with white; the cell and area below it and just beyond it darker

brown; the subbasal line represented by a white striga from costa and an oblique striga from median nervure to vein 1; the antemedial line white, defined by black on outer side, angled outwards on subcostal nervure, inwards on median nervure, and terminating at vein 1; claviform large, brown defined by black; orbicular and reniform ochreous white, the former V-shaped and open above; the postmedial line indistinct, whitish, bent outwards below costa, excurved to vein 4, then oblique, and with a series of small black dentate marks on its inner side; the subterminal line represented by a series of dentate dark marks, with a pale band on their inner side extending to the postmedial line and conjoined to a pale apical patch; a terminal series of black points. Hind wing ochreous white, the costal and terminal areas irrorated with brown; the underside with dark discoidal points.

Hab. U.S.A., California, 1 ♂ type. *Exp.* 38 millim.

*608. Feltia robustior. (Plate LXVIII. fig. 1.)

Feltia robustior, Smith, Can. Ent. xxxi. p. 206 (1899).

♂. Fuscous grey or brown irrorated with black and white; lower part of frons and vertex of head somewhat darker; tegulæ with black or brown medial line, fuscous, tipped with white at extremities; patagia edged with brown; abdomen pale fuscous grey. Fore wing with the markings rather well defined; subbasal line whitish, diffused, extending to submedian fold; antemedial line double, black filled in with white, inwardly oblique from costa to median nervure, excurved to vein 1, then oblique to middle of inner margin; claviform long, strongly defined by black; orbicular small, elliptical, defined by black; reniform small, partly defined by black; postmedial line single, blackish, interrupted, defined on outer side by white scales, minutely waved, bent outwards below costa, excurved to vein 4, then somewhat incurved; subterminal line whitish, angled outwards at vein 7 and dentate to termen at veins 3, 4, defined on inner side by a dark shade on costa, then by a series of dentate marks; a terminal series of small black lunules; cilia with a pale line at base and brown medial line; the veins finely streaked with black edged by white scales. Hind wing fuscous grey, with a slight discoidal lunule and terminal line; the underside white with dark irroration, a large blackish discoidal spot and terminal series of black lunules.

Hab. Canada, Manitoba, Brandon (*Hanham*). *Exp.* 40–42 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

Sect. III. Antennæ of male serrate and fasciculate.

A. Fore wing with the orbicular stigma V-shaped, open above.
  a. Fore wing with the reniform stigma constricted at middle; hind wing white ..... *olivia*.

b. Fore wing with the reniform stigma not constricted.
*a*¹. Hind wing white, the terminal area suffused with brown.
*a*². Fore wing with the reniform stigma lunulate... *ducens.*
*b*². Fore wing with the reniform stigma oblong ... *edentata.*
*b*¹. Hind wing wholly or almost wholly suffused with brown.
*a*². Fore wing with the postmedial line not defined by whitish.
*a*³. Fore wing with series of small dentate black marks before the subterminal line ..... *subgothica.*
*b*³. Fore wing without series of small dentate black marks before the subterminal line ... *herilis.*
*b*². Fore wing with the postmedial line defined by whitish ..... *honesta.*
B. Fore wing with the orbicular stigma not V-shaped.
a. Hind wing entirely suffused with brown.
*a*¹. Fore wing with the transverse lines present.
*a*². Fore wing with the orbicular and reniform stigmata not confluent.
*a*³. Fore wing with the reniform stigmata not angled inwards on median nervure.
*a*⁴. Head dark ..... *gravis.*
*b*⁴. Head rufous, or ochreous and rufous.
*a*⁵. Fore wing with the lines distinct, colouring bright ..... *vancouverensis.*
*b*⁵. Fore wing with the lines indistinct, colouring dull.
*a*⁶. Fore wing with more or less developed dark streaks beyond the reniform.
*a*⁷. Fore wing without whitish streak below base of cell ..... *volubilis.*
*b*⁷. Fore wing with whitish streak below base of cell ..... *pexa.*
*b*⁶. Fore wing without dark streaks beyond the reniform ..... *æneipennis.*
*b*³. Fore wing with the reniform stigma angled inwards on median nervure ..... *duo-signa.*
*b*². Fore wing with the orbicular and reniform stigmata confluent or connected by a black fascia. *xiphias.*
*b*¹. Fore wing with the transverse lines absent.
*a*². Fore wing with the orbicular and reniform stigmata confluent ..... *dislocata.*
*b*². Fore wing with the orbicular and reniform stigmata obsolete..... *aulacias.*
b. Hind wing white, the terminal area in female more or less tinged with brown.
*a*¹. Fore wing with the claviform filled in with black.
*a*². Fore wing with the claviform very large..... *informis.*
*b*². Fore wing with the claviform much smaller.
*a*³. Fore wing with the orbicular rounded..... *exclamationis.*
*b*³. Fore wing with the orbicular elongate and produced to a point ..... *malefida.*
*b*¹. Fore wing with the claviform not filled in with black.
*a*². Fore wing with black streak in cell between orbicular and reniform stigmata ..... *annexa.*
*b*². Fore wing without black streak in cell between orbicular and reniform stigmata.
*a*³. Fore wing with the antemedial line very black, highly angled outwards above inner margin. *canities.*
*b*³. Fore wing with the antemedial line not angled outwards above inner margin ..... *experta.*

*609. Feltia olivia.

Agrotis olivia, Morr. Proc. Bost. Soc. N. H. xviii. p. 238 (1876); Smith, Cat. Noct. N. Am. p. 80.

Reddish clay-yellow. Fore wing with ill-defined dark patch at base; antemedial line obsolete towards costa, double, lunulate; claviform short, defined by black; orbicular and reniform yellowish with white annuli, the latter constricted at middle; the cell before and between the stigmata black; median nervure streaked with white; postmedial line obsolete; subterminal line traceable, defined on inner side by dentate black marks, the area beyond it dark with an apical pale patch; cilia dusky, with a yellowish line at base. Hind wing pearly white, the veins and margins tinged with fuscous; the underside grey irrorated with blackish, a discoidal lunule.

Hab. U.S.A., Utah. *Exp.* 39 millim. This species is unknown to me.

610. Feltia ducens.

Agrotis jaculifera var., Guen. Noct. i. p. 262, pl. 5. f. 4 (1852).
Feltia ducens, Wlk. ix. 203 (1856); Smith, Cat. Noct. N. Am. p. 81.
Feltia radiata, Harr. MS.; Smith, List Lep. Bor. Am. p. 38.
Agrotis subgothica, Fitch, 1st & 2nd Rep. Ins. N. Y. p. 314, pl. 3. f. 1, nec Harv.

Head and tegulæ brown slightly mixed with grey; palpi blackish at sides; tegulæ with black medial line; thorax grey mixed with brown, the patagia with dark brown streak above and often some ferruginous red at extremity; legs largely marked with black; abdomen brownish grey, the anal tuft tinged with rufous; a sublateral series of blackish spots. Fore wing brown, with fleshy-white streaks on subcostal and median nervures and inner margin; the subbasal line represented by an oblique white striga from costa and

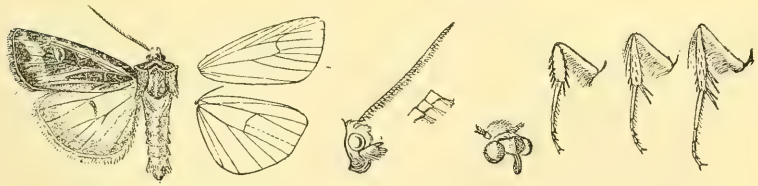


Fig. 66.—*Feltia ducens*, ♂. ½.

an inwardly oblique striga on a dark brown patch below the cell, the antemedial line by a striga from costa and a line between median nervure and vein 1; claviform defined by black and very long, extending to beyond origin of vein 2; an oblique whitish streak above it from antemedian line to near termen; the orbicular grey, V-shaped, open above, its lower edge whitish defined by black; reniform brownish, sometimes rufous, with white annulus defined by black; the veins of terminal area blackish on whitish

streaks; the postmedial line indistinct, whitish, bent outwards below costa, excurved to vein 4, then oblique, and with some dark dashes before its medial part; some white points on costa towards apex; the subterminal line represented by some dark dashes, with a whitish patch beyond them at apex and a broad band before them from vein 7 to inner margin, dentate outwards on veins 3, 4; a slightly waved fine black terminal line. Hind wing white, the costal and terminal areas broadly tinged with brown; the veins brownish; the underside with brown discoidal point.

Hab. Canada, Renfrew Co., 1 ♂, Orilla (*Bush*), 1 ♂ type, Br. Columbia, Vancouver I. (*J. J. Walker*), 3 ♂; U.S.A., Massachusetts, Beverly, 4 ♂, Grote Coll., N. York, 4 ♂, 2 ♀, Grote and Zeller Colls., Colorado. *Exp.* 36–42 millim.

Egg nearly spherical; height ·45 millim., diam. ·57 millim.; colour dirty white with brown mottlings; vertical ridges wavy, converging towards micropyle, the horizontal ridges fine. (Slingerland, Bull. Cornell Univ. Agric. Exp. Stat. 1895, p. 577, pl. iv.)

Larva. (Redescribed.)—Head 3·5 mm., shining pale brown, rather finely reticulate in dark brown, curved band dark brown, the one from the eye obscure. Cervical shield brown, slightly cornified, cut by the pale dorsal line and whitish subdorsal line. Body brown, finely mottled on a cream-coloured ground, skin somewhat thin and shagreened. Dorsal space broadly pale, mottled, centered by the faint pale dorsal line which is edged by a dusky shade that sends out obscure expansions at the tubercles. Lateral space darkly shaded, with traces of pale line. Substigmatal band broad, pale, brown-mottled; subventral space brown. Tubercles rather large and cornified; spiracles black; anal plate brown. A general feeder.—H. G. D.

*611. Feltia edentata.

Feltia edentata, Smith, J. N.Y. Ent. Soc. x. p. 38 (1902).

♂. Palpi fuscous at sides; head fuscous, the frons reddish grey; tegulæ fuscous brown at base, with black medial line, the tips brown and whitish; patagia grey irrorated with brown; thorax brown, the metathoracic crest greyish. Fore wing fuscous brown, suffused with reddish grey below costa, above median nervure, above claviform and below it to subterminal line, on postmedial area; the veins with dark streaks; subbasal and antemedial lines reddish grey, obsolete except in submedian interspace; claviform long and broad, almost filling the submedian interspace, fuscous defined by black; orbicular **V**-shaped, open above, reddish with grey annulus; reniform narrow, oblong, rather wider above, erect, rufous with reddish-grey annulus; cell before and between the stigmata fuscous; postmedial line only defined by the contrast between the dark medial and grey postmedial areas; subterminal line defined by the terminal area being narrowly dark except at apex; a terminal series of small black lunules and a yellowish line at base of cilia. Hind wing dirty yellowish white, the terminal area fuscous; cilia

yellowish at base, with fuscous medial line and whitish tips; the underside whitish, the costal area with dark irroration and apical suffusion.

Hab. U.S.A., Washington, Pullman. *Exp.* 37 millim. This species is unknown to me.

612. **Feltia subgothica.** (Plate LXVIII. fig. 2.)

Noctua subgothica, Haw. Lep. Brit. p. 224 (1810); Steph. Ill. Brit. Ent., Haust. ii. p. 126, pl. 22. f. 3; Wood, Index Ent. p. 36, pl. 9. f. 149; Packard, Guide, p. 306, f. 238; Saund. Fruit Insects, p. 328, f. 339.
Agrotis jaculifera, Guen. Noct. i. p. 262 (1852); Smith, Cat. Noct. N. Am. p. 81.
Agrotis tricosa, Lintner, Ent. Cont. iii. p. 159 (1874).

♂. Head and thorax purplish brown, slightly mixed with grey; tegulæ with black medial line; thorax ochreous or greyish brown; legs black irrorated with grey; abdomen ochreous, irrorated with black especially towards extremity, the anal tuft tinged with fulvous. Fore wing purplish fuscous; fine pinkish-white streaks on each side of subcostal nervure and on median nervure; the subbasal line represented by a pale brownish striga from costa and an oblique striga below the cell where it crosses a black patch, the antemedial line by an outwardly oblique striga from median nervure near the subbasal line to vein 1; claviform elongate, blackish, with deep black outline; orbicular V-shaped, greyish, open above, and with a pale line below; reniform brownish with grey annulus, its centre defined by brown, the cell before and between the stigmata and the area between the reniform and postmedial line black; the area from above and beyond the claviform to near tornus pale pinkish brown; the postmedial line indistinct, minutely dentate, bent outwards below costa, excurved to vein 4, then oblique, and with a series of black dashes on its inner side beyond the cell; the subterminal line grey, with some greyish suffusion before it, angled outwards at veins 6, 4, and 3, and with a series of black dashes before and on it; a fine waved black terminal line. Hind wing ochreous whitish, tinged with brown; the veins and terminal area fuscous brown; cilia ochreous, with fuscous line near base; the underside with the costal and terminal areas irrorated with brown; a dark apical patch and discoidal point.

♀. Hind wing often uniform fuscous brown.

Hab. Canada, Renfrew Co., 3 ♂, 2 ♀, Orilla (*Bush*), 3 ♂; U.S.A., N. States, 1 ♂ type, N. York, 4 ♂, 4 ♀, type *tricosa*, Texas, Colorado. *Exp.* 42–46 millim. The British localities of the older authors for this species are erroneous.

Larva. (Redescribed.)—Head 3·5 mm., shining pale brown, rather finely reticulate in dark brown, curved band dark brown, the one from the eye obscure. Cervical shield brown, slightly cornified, cut by the pale dorsal line only. Body brown, finely mottled on a cream-coloured ground, skin somewhat thin and shagreened. Dorsal space broadly pale, filled with broad brown segmental blotches touching the edge; dorsal line obsolete. Lateral space darkly

shaded, with traces of a pale line. Substigmatal band broad, pale, brown-mottled; subventral space brown. Tubercles rather large and cornified; spiracles black; anal plate brown. A general feeder.—H. G. D.

613. Feltia herilis. (Plate LXVIII. fig. 3.)

Agrotis jaculifera, var. B, Guen. Noct. i. p. 262 (1852).
Agrotis herilis, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 99 (1873); Smith, Cat. Noct. N. Am. p. 82.

Head pale brown, the sides of palpi and frons blackish; tegulæ with black medial line, dark grey in front, pale brown behind; thorax purplish brown, the dorsal crest greyish at tips; legs dark brown, the tibiæ and 1st joints of fore and mid tarsi whitish above, the hind tarsi with whitish rings; abdomen pale brown, the anal tufts tinged with fulvous. Fore wing dark purplish fuscous; the subbasal line pale, defined by black on inner side, angled on median nervure and below the cell, traversing a black patch; the antemedial line pale defined by black lines, angled outwards below costa, inwards on median nervure, then very oblique to above inner margin, where it is angled outwards; the subcostal nervure with purplish-grey streaks on each side of it; the median nervure streaked with white; the claviform a large triangular black patch, with ochreous-white streak above it and along vein 2 to postmedial line; the orbicular V-shaped, open above, purplish grey with pale lines on lower edges; the reniform ochreous, its centre defined by brown; the cell before and between the stigmata black; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line indistinct, angled outwards at vein 7 and middle. Hind wing fuscous brown, paler towards base and inner margin; the cilia with brown line through them; underside with slight discoidal lunule; the costal area irrorated with brown; the terminal area brown to submedian fold.

Hab. Canada, Renfrew Co., 9 ♂ Grote Coll., Orilla (*Bushe*), 1 ♂, 1 ♀; Br. Columbia; U.S.A., N. States E. of Rocky Mountains, N. York, 5 ♂, Massachusetts, Buffalo, 1 ♀, Alabama, 1 ♂, 1 ♀, type. *Exp.* 36–44 millim.

Larva. (Redescribed).—Head 3·5 mm., shining pale brown, rather finely reticulated in dark brown; curved band dark brown, the one from the eye obscure; cervical shield brown, slightly cornified, cut by the pale dorsal line only; body brown, finely mottled on a cream-coloured ground; skin somewhat thin and shagreened; dorsal space broadly pale, filled with broad brown segmental blotches touching its edges; dorsal line obsolete; lateral space darkly shaded, with traces of a pale line; substigmatal band broad, pale, brown-mottled; subventral space brown; tubercles rather large and cornified; spiracles black; anal plate brown. A general feeder.—H. G. D.

614. Feltia honesta. (Plate LXVIII. fig. 4.)

Agrotis honesta, Staud. Iris, v. p. 354, pl. 3. f. 3 (1892); id. Cat. Lep. pal. p. 139.

♂. Head and thorax dark brown mixed with bluish grey; abdomen ochreous brown. Fore wing grey, largely suffused and irrorated with dark brown; the median nervure streaked with white, the subcostal nervure and vein 1 slightly with grey towards base; the subbasal line curved from costa to vein 1, grey; the antemedial line grey, oblique, slightly waved and strongly angled outwards above inner margin; the area below base of cell black-brown, also the claviform, which is ill-defined below and with a pale streak beyond it; orbicular and reniform greyish, with whitish annuli defined by black, the former V-shaped, open above, the cell before and between them dark brown; the postmedial line black, defined by grey on outer side, minutely waved, bent outwards below costa, excurved to vein 4, then very oblique; subterminal line indistinct, grey, very slightly angled outwards at vein 7 and excurved at middle, the area beyond it and before it towards costa tinged with fuscous. Hind wing fuscous brown, with a slight ochreous tinge towards base; the cilia pale; the underside with dark discoidal lunule, curved postmedial line, and traces of diffused subterminal line.

Hab. Mongolia, Urga, 1 ♂; E. Siberia, Kentei. *Exp.* 38 millim.

615. Feltia gravis. (Plate LXVIII. fig. 5.)

Agrotis gravis, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 155 (1874); Smith, Cat. Noct. N. Am. p. 83.
Agrotis vapularis, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 81 (1876).

Head and tegulæ brown mixed with purplish grey, the tegulæ with black medial line; thorax purplish grey; the tibiæ and tarsi blackish, with grey rings; abdomen grey-brown. Fore wing purplish grey suffused with brown, especially on costal area and in cell; the subbasal line grey, sinuous, with some black on its inner edge and extending from costa to submedian fold; a black streak below base of cell; the antemedial line indistinct, grey, sinuous; claviform elongate, brown defined by black; orbicular small, brown, with whitish annulus defined by black, its upper edge produced to a point on outer side; reniform with whitish on inner and outer edges, interruptedly defined by black and with its inner edge somewhat produced inwards on median nervure; the postmedial line strongly dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line grey, strongly dentate below costa and at middle, with a series of dentate black marks on its inner side at middle, the area beyond it darker; cilia pale, with brown lines through them. Hind wing fuscous brown, the interspaces of discal area whitish; cilia white, with a brown line at base; underside whitish, with the costal and terminal areas strongly irrorated with brown; a black discoidal lunule.

Ab. 1. *vapularis*. Thorax and fore wing suffused with fuscous black.

Hab. U.S.A., California, Mendocino, 3 ♂, 1 ♀, type and type *vapularis*. *Exp.* 32–36 millim.

616. Feltia vancouverensis. (Plate LXVIII. fig. 6.)

Agrotis vancouverensis, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 134, pl. 4. f. 4 (1873); Smith, Cat. Noct. N. Am. p. 83.
Agrotis hortulana, Morr. Proc. Acad. Nat. Sci. Phil. 1875, p. 430.
Agrotis semiclarata, Grote, Can. Ent. xiii. p. 132 (1881); id. Ill. Essay, 52, pl. i. f. 9.
Agrotis agilis, Grote, Can. Ent. xx. p. 128 (1888).

Head ferruginous, the palpi except at tips, sides of frons, and antennæ blackish; tegulæ with the basal half black with rufous band, the tips grey edged with ferruginous; thorax grey, the vertex and edges of patagia ferruginous; pectus brown; legs blackish, with white rings at the joints; abdomen grey-brown, more or less strongly tinged with ferruginous at sides and extremity. Fore wing purplish grey; the costal area suffused with black or with vinous red; subbasal line black, defined by white on outer side, waved and extending to submedian fold; the antemedial line dentate, defined by white on inner side on the dark costal area; the claviform elongate, black or brown defined by black, and continued to base as a streak; orbicular and reniform brown, with grey annuli defined by black, the former rather small and elliptical or with its outer edge produced to a point; the medial shade from lower angle of cell to inner margin brown or blackish; the postmedial line strongly dentate, bent outwards below costa and incurved in submedian interspace; the subterminal line grey, angled outwards below costa and dentate at veins 4, 3, and with a series of wedge-shaped brown marks on its inner side; a terminal series of black points. Hind wing fuscous brown, the interspaces of discal area sometimes whitish; cilia whitish, with brown line at base; underside with the costal area irrorated with brown; a discoidal spot; a sinuous postmedial and traces of a subterminal line.

Hab. Canada, Vancouver I. (*J. J. Walker*), 1 ♂; U.S.A., Washington Terr., 2 ♂, 3 ♀, type *semiclarata*, Grote Coll., Oregon, Portland, Colorado, Utah, California. *Exp.* 40 millim.

Larva. Dyar, Proc. Ent. Soc. Wash. iv. p. 317 (1899).

Head 3·6 mm., pale, reticulate, the curved vertical dark band faint below; ocellar line not strongly marked. Brown and cream colour, mottled on a greenish ground that appears subventrally; cervical shield grey, not well cornified. Lines all obsolete except the narrow pale dorsal one, which is moderately distinct on the anterior portion of the body. The brown mottlings are heavier dorsally and above the position of the subdorsal line, enclosing a pale space that widens in the incisures; spiracles black. Feeds on wild cherry.—H. G. D.

617. Feltia volubilis. (Plate LXVIII. fig. 7.)

Agrotis volubilis, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 118 (1874); Smith, Cat. Noct. N. Am. p. 84.
Agrotis stigmosa, Morr. Proc. Bost. Soc. N. H. xvii. p. 163 (1874).

♂. Head ochreous brown; the palpi except at base and sides of frons black; thorax grey, tegulæ rufous at base and with a black medial line; legs blackish, with pale rings at the joints; abdomen grey tinged with brown. Fore wing pale grey-brown to pale ochreous brown, the costal area suffused with fuscous; the subbasal line absent; the antemedial line indistinct, black, waved, and strongly dentate above inner margin; claviform narrow, defined by black and continued to base as a streak; orbicular and reniform with greyish annuli defined by black, the former small with its outer edge produced to a point, some black suffusion in the cell between the stigmata and beyond the reniform; the postmedial line strongly dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line represented by a series of whitish and black dentate marks; a fuscous shade on termen below apex; a terminal series of black points. Hind wing whitish, the veins, costal and terminal areas tinged with brown or wholly brown; cilia white, with a brown line at base or pale brownish; the underside with small discoidal spot and postmedial series of short streaks on the veins sometimes connected by a line.

♀. Fore wing more uniformly suffused with fuscous brown.

Hab. Canada; U.S.A., N. & E. States, Massachusetts, Beverly, 1 ♀, New York, 4 ♂, 5 ♀, Grote Coll. type, Oregon, Portland, California, 1 ♀. *Exp.* 38 millim.

618. Feltia pexa. (Plate LXVIII. fig. 8.)

Agrotis pexa, Berg, An. Soc. Argent. iv. p. 199 (1877).
Agrotis ingoufii, Mab. Bull. Soc. Philom. (7) ix. p. 59 (1885); id. Nouv. Arch. Mus. Paris, (3) i. p. 146, pl. 10. f. 9.

♂. Head and thorax pale grey-brown mixed with black; abdomen brownish grey irrorated with fuscous. Fore wing grey; a black patch below base of cell, with a curved white streak on it; the medial part of inner area suffused with fuscous and with a short antemedial white streak on it; claviform slightly defined by black, and with a white streak in submedian fold beyond its extremity; orbicular small, diamond-shaped, with brown centre and white or grey annulus defined by black; reniform white or brown with grey annulus; the cell before and between the stigmata and the area between reniform and the almost obsolete postmedial line suffused with black; the subterminal line represented by a series of whitish points with a blackish patch before it at costa, and wedge-shaped black marks from vein 6 to inner margin; a terminal series of black points. Hind wing whitish, the veins and terminal half suffused with fuscous; the underside white irrorated with fuscous, a small discoidal spot and diffused dark subterminal patch between veins 7 and 3.

Hab. Patagonia, Santa Cruz, type † *ingoufii* in Mus. Paris, Sts. of Magellan (*Coppinger*), 1 ♂, Punta Arenas. *Exp.* 42 millim.

619. **Feltia æneipennis.** (Plate LXVIII. fig. 9.)

Agrotis æneipennis, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 81 (1876); Smith, Cat. Noct. N. Am. p. 83.
Agrotis clodiana, Grote, Papilio, i. p. 76 (1881); id. Ill. Essay, 52, pl. i. f. 10.

Head and thorax ferruginous, the latter more or less strongly tinged with grey; tarsi banded with fuscous; abdomen grey-brown tinged with ferruginous. Fore wing ferruginous or reddish brown; the subbasal line grey, slightly defined by black, waved, and extending from costa to submedian fold; the antemedial line grey, defined by blackish on outer side, dentate outwards below costa and more strongly above inner margin, angled inwards on median nervure and outwards in submedian fold; claviform ferruginous, and often defined by black; orbicular and reniform small, brown with grey annuli sometimes defined by black; the postmedial line strongly dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line indistinct, grey, dentate below costa and on veins 3, 4; a terminal series of black points. Hind wing yellowish white, with the veins and costal area brownish, or brown with the interspaces of discal area whitish, or wholly brown; underside with the costal area irrorated with brown; a discoidal spot and curved postmedial punctiform line.

Hab. U.S.A., Washington Terr., 1 ♂, 1 ♀ type *clodiana*, California (*Walsingham*), 1 ♀, Sanzalito, Grote Coll., 3 ♂, 2 ♀, type. *Exp.* 38 millim.

620. **Feltia duo-signa**, n. sp. (Plate LXVIII. fig. 10.)

♂. Head and thorax brown mixed with grey; palpi blackish at sides except at tips; tegulæ with black medial line; tarsi ringed with white; abdomen grey-brown. Fore wing fuscous brown strongly irrorated with grey; a double, waved, subbasal line from costa to submedian fold; a waved black antemedial line angled outwards below costa and strongly above inner margin, defined by whitish on inner side; claviform elongate, black, or with slight greyish centre; orbicular and reniform fuscous defined by black, the former round, elliptical, or produced to a point on outer side, the latter large, strongly angled inwards on median nervure, and sometimes connected with the orbicular; the postmedial line dentate, black, defined by whitish on outer side, bent outwards below costa, excurved to vein 4, then oblique, and incurved in submedian fold; the subterminal line whitish, angled outwards at vein 7 and dentate on veins 4, 3, with a series of dentate black marks before its medial part; a terminal series of black points; cilia with pale line at base. Hind wing white, tinged with brown on costal and terminal areas;

the veins brown ; a brown terminal line and line through the cilia ; the underside with the costal area brown irrorated with white, a dark discoidal spot and traces of curved postmedial line.

♀. Hind wing wholly suffused with brown.

Hab. Kashmir, Scinde Valley (*Leech*), 3 ♂, 3 ♀, type, Goorais Valley, 3 ♂, 1 ♀. *Exp.* 36 millim.

621. **Feltia xiphias.** (Plate LXVIII. fig. 11.)

Agrotis xiphias, Meyr. Faun. Hawai. i. p. 146 (1899).

Head brown, the vertex blackish ; thorax grey ; tegulæ with the front half black ; patagia blackish in front and on upper edge ; pectus and legs grey irrorated with black; abdomen fuscous brown, the ventral surface ochreous-white with some black sublateral spots, the anal tuft ochreous in male. Fore wing pale brownish grey, sometimes suffused with fuscous ; the veins with fine dark streaks ; the interspaces towards termen with reddish-brown stripes ; claviform black, extending from base to middle of wing ; orbicular and reniform black, or with blackish centres and grey annuli defined by black, the former elongate and produced to a point, confluent with the reniform or connected with it by a black fascia ; the postmedial line indistinct, minutely waved, excurved from costa to vein 4, then incurved ; the subterminal line pale, defined by a brownish patch on its inner side at costa and the area beyond it dark, angled outward at vein 7 and dentate at median nervules ; a terminal series of black points. Hind wing fuscous brown ; the cilia pale ochreous with a brownish line at base ; the underside greyer, with black discoidal point, curved postmedial line, and terminal series of black points.

Ab. 1. Head, thorax, and fore wing much more uniform red-brown, the base of tegulæ not dark ; fore wing with the veins concolorous and not defined by grey ; claviform not filled in with black.

Hab. Hawaii, Haleakala (*Perkins*), 2 ♂, 3 ♀, type. *Exp.* 36–42 millim.

622. **Feltia dislocata.** (Plate LXVIII. fig. 12.)

Leucania dislocata, Wlk. ix. 112 (1856).

Head and front of tegulæ pale reddish brown, tegulæ at tips and thorax brown mixed with grey ; pectus and femora with pale brown hair; tibiæ and tarsi mostly white ; abdomen greyish ochreous, the anal tuft fulvous, the ventral surface whitish with sublateral blackish line. Fore wing pale ochreous, the costal and inner areas grey irrorated with brown ; the veins with black streaks defined by white on each side ; claviform brown defined by black, elongate and continued to base as a narrow fascia ; an antemedial dark point in cell ; orbicular and reniform brownish defined by black ; the former elongate and confluent with the latter, which is somewhat

tridentate, being produced to a point above vein 5, some slight dark streaks above bases of veins 2 and 3 sometimes present; a terminal series of black points. Hind wing fuscous brown; the cilia whitish with brownish line at base; the underside white irrorated with brown, a black discoidal lunule and terminal series of points except towards tornus.

Hab. Hawaii, 1 ♀ type, Honolulu (*Blackburn*), 2 ♂, 1 ♀, Kona (*Perkins*), 1 ♂, 2 ♀. *Exp.* 40 millim.

623. Feltia aulacias. (Plate LXVIII. fig. 13.)

Agrotis aulacias, Meyr. Faun. Hawai. i. p. 145 (1899).

Head and thorax reddish or grey-brown; abdomen fuscous brown, the anal tuft fulvous in male. Fore wing fuscous brown suffused with reddish brown, the veins grey-white, obscurely so towards costa; the interspaces with indistinct blackish streaks; a terminal series of black points. Hind wing fuscous brown; the cilia with a pale line at base; the underside with black discoidal point.

Hab. Hawaii, Haleakala (*Perkins*), 2 ♂, 3 ♀, type. *Exp.* 38 millim.

624. Feltia informis. (Plate LXVIII. fig. 14.)

Agrotis informis, Leech, P. Z. S. 1889, p. 500, pl. 50. f. 1.
Agrotis informis, var. *confluens*, Leech, P. Z. S. 1889, p. 500.

♂. Head and thorax purplish grey mixed with reddish brown; palpi black, pale at tips; tegulæ with black semicircular patch; legs black, the tarsi with pale rings; abdomen pale or fuscous brown. Fore wing fuscous or reddish brown suffused with purplish grey; a waved subbasal line from costa to submedian fold, defined with whitish on outer side; a waved antemedial line defined by grey on inner side, somewhat angled outwards below costa; claviform black, more or less elongate; orbicular and reniform reddish brown or fuscous defined by black, the former elliptical, the latter angled inwards on vein 1 in one specimen; a waved medial shade; the postmedial line minutely dentate, defined by grey on outer side, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line grey, irregularly dentate, angled outwards at vein 7 and excurved at middle, the area beyond it rather darker. Hind wing white; the costal area, veins, and a terminal line brownish; the underside with the costal area irrorated with brown, a discoidal point and postmedial series of short streaks on the veins.

♀. Hind wing with the costal, inner, and terminal areas broadly suffused with brown.

Ab. 1. *confluens*. Fore wing with the orbicular and reniform stigmata slightly confluent.

Hab. Japan, Yesso (*Pryer*), 2 ♂, Yokohama (*Pryer*), 2 ♂, 2 ♀, type, Hakodate, 1 ♂, 2 ♀, type *confluens*. *Exp.* 42–46 millim.

625. Feltia exclamationis.

Noctua exclamationis, Linn. Syst. Nat. ed. x. p. 515 (1758); Hübn. Eur. Schmett., Noct. f. 149; Godt. Lép. Fr. v. pl. 67. ff. 3, 4; Steph. Ill. Brit. Ent., Haust. ii. p. 126; Staud. Cat. Lep. pal. p. 148.
Agrotis serena, Alph. Rom. Mém. v. p. 137 (1889).

♂. Head and thorax grey-brown to pale rufous; palpi black at sides except at extremity; tegulæ with blackish triangular patch; tarsi with pale rings; abdomen grey-brown or ochreous brown. Fore wing grey-brown or pale reddish brown; an indistinct waved subbasal line from costa to submedian fold; an indistinct waved antemedial line; claviform elongate, black, sometimes with small pale centre; orbicular and reniform fuscous or greyish defined by black, the former usually small, round, sometimes larger, elliptical, brown, and connected with the reniform; postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line greyish, minutely dentate, angled outwards at vein 7 and excurved at middle, the area beyond it rather darker. Hind wing white, the veins, costal and inner areas, termen and cilia tinged with ochreous; the underside with the costal area thickly irrorated with brown; a postmedial series of short black streaks on the veins.

♀. Head, thorax, and fore wing red-brown to fuscous brown; hind wing largely or almost wholly suffused with fuscous brown.

Ab. 1. *serena*. Paler; fore wing whitish grey.—Spain; C. Asia.

Hab. Britain, Leech Coll.; France, Leech Coll.; Germany, Zeller Coll.; Switzerland, Frey Coll.; Spain; Norway, Zeller and Frey Colls.; Russia; W. Turkestan, Buchara, Ferghana, Sarawschan; Tibet, Amdo. *Exp.* 36–46 millim.

Larva. Meyr. Brit. Lep. p. 92; Barrett, Lep. Brit. iii. p. 309, pl. 127. f. 1.

Pale pinkish ochreous or brown; dorsal, subdorsal, and spiracular lines more or less dark-edged; spiracles large, black; head pale, with two dark brown marks. Food-plants: roots and leaves of *Chenopodium*, *Brassica*, *Peucedanum*, etc. 7–4.

626. Feltia malefida. (Plate LXVIII. fig. 15.)

Agrotis malefida, Guen. Noct. i. p. 267 (1852); Smith, Cat. Noct. N. Am. p. 84.
Agrotis inspinosa, Guen. Noct. i. p. 269 (1852).
Agrotis consueta, Wlk. x. 334 (1856).

♂. Head ochreous white, brown, or greyish fuscous; palpi blackish at base; tegulæ fuscous black, with deep black medial line; thorax grey mixed with brown, or brown; tibiæ and tarsi blackish, with pale rings at the joints; abdomen brownish grey, the anal tuft tinged with fulvous. Fore wing grey tinged with brown, the costal area suffused with fuscous; the subbasal line almost obsolete; the antemedial line double, black filled in with grey, waved and bent inwards to vein 1, where it terminates; claviform short and black; orbicular and reniform black with grey annuli defined by a black line, the former small with its outer

edge produced to nearly or quite join the reniform; the postmedial line indistinct, highly dentate, bent outwards below costa and oblique below vein 4; a subterminal series of pale dentate marks with black beyond those above veins 4, 5, and 7. Hind wing semihyaline white, the veins and costa tinged with brown.

♀ with the ground-colour greyer.

Hab. U.S.A., 1 ♂, 2 ♀ type, N. York, N. Jersey, Alabama, 1 ♀, Florida, S. & W. States, California; Cuba; Haiti (*Tweedie*), 1 ♂; Bahamas, Nassau (*Bonhote*), 1 ♂; Mexico, Jalapa (*Trujillo*), 2 ♂, 3 ♀, Durango (*Becker*), 1 ♀, Presidio (*Forrer*), 1 ♂, Mexico city (*Godman*) 1 ♂, (*Hoege*) 1 ♀, Coatepec (*Brook*), 1 ♀, Patycuaro (*Godman*), 1 ♂; Costa Rica, Irazu (*Rogers*), 1 ♀, Candelaria Mts. (*Underwood*), 1 ♂, Godman-Salvin Coll.; Venezuela, 2 ♂, 1 ♀, type *consueta*; Brazil, type † ♀ *inspinosa*, in Coll. Oberthur; Argentina, Goya (*Perrins*), 1 ♂; Falkland Is. (*Vallentin*), 5 ♂, 4 ♀. *Exp.* 44 millim.

Larva. Riley, Rep. Nox. Ins. 1885, p. 292, pl. 2. f. 3.

(Redescribed.) Head 3·5 millim., pale brown, pale reticulate, curved vertical band dark brown, not angled inward. Cervical shield brown, cut by pale dorsal line and traces of a subdorsal one. Skin rather thin, smooth. Dorsal space broadly pale, brownish shaded centrally, cut by the pale dorsal line faintly. Lateral space brown above next the white edge of the dorsal space, becoming translucent below, the faint lateral line and broad substigmatal band nearly lost, pale. Tubercles large, light brown, cornified; spiracles black.

A general feeder.—H. G. D.

627. Feltia annexa. (Plate LXVIII. fig. 16.)

Agrotis annexa, Treit. Schmett. Eur. v. p. 154 (1825); Steph. Ill. Brit. Ent., Haust. ii. p. 117, pl. 22. f. 2; Smith, Cat. Noct N. Am p. 84.
Agrotis anteposita, Guen. Noct. i. p. 278 (1852); Druce, Biol. Centr.-Am., Het. i. p. 283.
Noctua lutescens, Blanch. Gay's Chile, Zool. vii. p. 76 (1852).
Agrotis decernens, Wlk. x. 333 (1856).
Xylina lutea, Druce, Biol. Centr.-Am., Het. i. p. 297, pl. xxviii. f. 2 (1889).
Agrotis interposita, Mssn. Stübel's Reise, p. 142, pl. vi. f. 19 (1890).

♂. Head and thorax red-brown slightly mixed with fuscous; tegulæ with slight black medial line; legs black and brown; abdomen pale red-brown, the ventral surface whitish. Fore wing pale red-brown, with some fuscous suffusion below base of cell and on costal area before apex; an indistinct double, waved, black subbasal line from costa to vein 1; the antemedial line double, very strongly dentate outwards below costa, in cell and above inner margin, and angled outwards in submedian fold; the claviform defined by black, narrow and elongate; the orbicular and reniform small, defined by black, the former oblique elliptical, open above, and with a black streak in the cell between it and the reniform; the postmedial line indistinct, strongly dentate, bent outwards below costa, and oblique below vein 4; the subterminal line represented by a series

of pale and fuscous dentate marks; the veins of terminal area streaked with black, and with a terminal series of black points. Hind wing semihyaline white, the costa and cilia at apex slightly tinged with brown.

♀. Fore wing suffused with fuscous, leaving the costal area to end of cell and the terminal area brown.

Hab. U.S.A., Massachusetts, New York, Georgia, 1 ♂, Kansas, 3 ♂, 2 ♀, Texas, 1 ♂, 5 ♀, Florida, St. John's Bluff (*Doubleday*), 1 ♂, 1 ♀, California; Bermuda, Challenger Coll., 2 ♀; Bahamas, Nassau (*Bonhote*), 1 ♀; St. Domingo (*Tweedie*), 1 ♂, 2 ♀, type *decernens*; Mexico, Jalapa (*Trujillo*), 4 ♂, 2 ♀, type † *lutea* in Coll. Druce, Mexico city (*Godman*), 1 ♂, Patycuaro (*Godman*), 1 ♀, Misantla (*Godman*), 1 ♀; Br. Honduras, Belize, 1 ♂, 2 ♀; Guatemala (*Rodriguez*), 1 ♂, 1 ♀; Costa Rica, Candelaria Mts. (*Underwood*), 3 ♂, Irazu (*Rogers*), 1 ♂; Panama, Chiriqui (*Champion*), 1 ♂, Godman-Salvin Coll.; Colombia; Venezuela, 1 ♂; Brazil, Pernambuco (*Ridley*), 1 ♂, 1 ♀, Rio Janeiro, 1 ♂; Peru, Lima, 2 ♂, 5 ♀, Huancha (*J. J. Walker*), 1 ♀; Chile (*Edmonds*), 2 ♂, 1 ♀; Argentina, Goya (*Perrins*), 1 ♀. *Exp.* 38–44 millim.

Egg. French, Can. Ent. xiv. p. 297.

Diam. ·03 inch, globular, white, base broad, with vertical ridges, of which 12 reaching apex alternate with double the number of different lengths, the ridges connected by slender bars.

Larva. (Redescribed.) Head 3·5 millim., pale brown, pale reticulate, vertical band dark brown, strongly angled at top of clypeus, which is brown filled. Cervical shield well cornified, shining brown, cut by a pale dorsal line and traces of a subdorsal one. Dorsal space broadly pale, faintly brown, clouded on the centres of the segments, heaviest next the obscure, pale, dorsal line. Skin rather thin, smooth. Lateral space brown with faint pale subdorsal and lateral lines. Substigmatal band broad, distinctly but not brightly or very uniformly white-pigmented, the subvertical area becoming translucent. Tubercles dark brown, rather large and distinctly cornified; anal plate brown.

A general feeder.—H. G. D.

628. **Feltia canities.** (Plate LXVIII. fig. 17.)

Peridroma canities, Grote, ined.

Head and thorax pale red-brown mixed with white, the scales pencilled with white; pectus mostly white; abdomen white, dorsally tinged with pale red-brown. Fore wing pale reddish brown, irrorated with fuscous, especially towards costa; an indistinct double, waved, subbasal line from costa to submedian fold; a double, waved, antemedial line acutely dentate inwards on vein 1; claviform a short fuscous streak; orbicular and reniform small with fuscous centres, and whitish annuli defined by black, the former round; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4 and incurved in submedian fold; the subterminal line represented by a series of

small dentate white marks in the interspaces. Hind wing semihyaline white, the veins, costal area, and termen tinged with brown.

Hab. Argentina, Goya (*Perrins*), 2 ♀, Buenos Ayres (*Schimpfer*), 2 ♂ type. *Exp.* 40 millim.

629. Feltia experta. (Plate LXVIII. fig. 18.)

Laphygma experta, Wlk. Char. Undescr. Het. p. 30 (1869).
Laphygma innotabilis, Wlk. Char. Undescr. Het. p. 31 (1869).

♂. Head and thorax grey irrorated with brown; abdomen whitish, slightly tinged with brown, the anal tuft with ochreous. Fore wing grey, tinged with ochreous brown and irrorated with fuscous; the subbasal line represented by indistinct grey and fuscous strigæ from costa and median nervure; an indistinct double, waved, antemedial line sharply angled outwards above inner margin; claviform small, obscurely defined by fuscous; orbicular and reniform with fuscous centres and grey annuli defined by black, the former elliptical or pointed at extremities; an indistinct oblique waved medial line from lower angle of cell to inner margin; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line represented by a series of small more or less indistinct dentate pale and fuscous marks in the interspaces; a terminal series of black points. Hind wing semihyaline white, the underside with the costal area slightly irrorated with brown.

♀. Hind wing with the marginal areas tinged with brown.

Hab. Peru, Callao, 5 ♂, 3 ♀, type. *Exp.* 40–46 millim.

Sect. IV. Antennæ of male with fasciculate cilia.

630. Feltia clerica. (Plate LXVIII. fig. 19.)

Agrotis clerica, Butl. Trans Ent. Soc. 1882, p. 129.
Agrotis carbonifera, Mab. Bull. Soc. Philom. (7) ix. p. 60 (1885); id. Miss. Sci. Cap Horn, p. 16, pl. ii. f. 3.
Agrotis punta-arenæ, Staud. Hamburg. Magalhaens. iv. p. 53 (1899).

♂. Head and thorax black, extremity of palpi and dorsal crests ochreous or tipped with grey; fore tibiæ brownish, the tarsi with pale rings, the hair of pectus grey-tipped; abdomen blackish irrorated with grey, greyish at base. Fore wing fuscous black, the basal and terminal areas sometimes slightly irrorated with ochreous; an indistinct double, waved, subbasal line from costa to submedian fold sometimes filled in with ochreous; a waved antemedial line sometimes defined by ochreous on inner side; claviform more or less distinctly defined by black; orbicular and reniform defined by black and a few ochreous scales, the former round; the postmedial line dentate, sometimes slightly defined by ochreous on outer side, bent outwards below costa, slightly angled inwards in discal fold and incurved below vein 4; the subterminal line represented by a series of small obscure dentate black marks, sometimes with slight

ochreous points on them; a terminal series of black points. Hind wing semihyaline white; the costal and terminal areas suffused with fuscous, narrowing to tornus; cilia white with fuscous line at base; the underside with slight postmedial series of black striæ on the veins.

♀. Hind wing with the costal, inner, and terminal areas broadly suffused with fuscous.

Ab. 1. Head, thorax, and fore wing with the ground-colour purplish red.

Ab. 2. *punta-arenæ*. Head, thorax, and fore wing with the ground-colour ochreous irrorated or suffused with black.

Hab. Chile (*Edmonds*), 1 ♂, 1 ♀ type; Falkland Is., Darwin Harbour (*Dale*), 6 ♂, 1 ♀, (*Vallentin*) 7 ♂, 6 ♀; Patagonia, Punta Arenas, type † ♂ *punta-arenæ* in Mus. Stockholm; Tierra del Fuego, type † *carbonifera* in Mus. Paris. *Exp.* 40–46 millim.

Genus **HERMONASSA**.

	Type.
Hermonassa, Wlk. xxxii. 631 (1865)	*consignata*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching vertex of head and with pointed tuft of hair at extremity, the 3rd long, naked; frons smooth; eyes large, rounded; antennæ ciliated; head and thorax clothed with hair and scales, the pro- and metathorax with spreading crests; tibiæ spined; abdomen dorsally flattened. Fore wing long and narrow, the margins subparalled, the apex rounded; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 stalked or from angle of cell.

A. Hind wing uniform brown.	
a. Fore wing red	*sinuata*.
b. Fore wing dark brown	*cecilia*.
B. Hind wing pale, at least towards base.	
a. Fore wing with pale streaks on the veins	*spilota*.
b. Fore wing without pale streaks on the veins.	
a^1. Fore wing with the ground-colour olive-green or suffused in part with olive. *Exp.* 34–38 millim.	
a^2. Fore wing with the antemedial line bisecting the claviform	*incisa*.
b^2. Fore wing with the antemedial line not bisecting the claviform	*lanceola*.
b^1. Fore wing fuscous suffused with purple or rufous, rarely with olive. *Exp.* 32 millim.	*consignata*.
c^1. Fore wing pale reddish. *Exp.* 36 millim.	*clava*.
d^1. Fore wing whitish. *Exp.* 34 millim.	*pallidula*.

631. Hermonassa sinuata.

Hermonassa sinuata, Moore, P. Z. S. 1881, p. 353, pl. 38. f. 5; Hmpsn. Moths Ind. ii. p. 197.
Hermonassa cuprina, Moore, Lep. Atk. p. 120 (1882).

Head and thorax dark blood-red mixed with pale rufous; abdomen fuscous, the ventral surface blood-red. Fore wing blood-red, with pale rufous streaks on the veins; the subbasal line greyish

defined by deep red, oblique from costa to submedian fold; the antemedial line pale, defined on each side by red, angled outwards below costa, incurved to above inner margin, where it is strongly angled outwards; stigmata deep red, with pale annuli defined by red, the claviform pointed at extremities, bisected by antemedial line, the orbicular elongate elliptical; a slight oblique medial shade from cell to inner margin; the postmedial line double, dark with pale middle, minutely dentate, slightly bent outwards below costa, angled inwards in discal fold and incurved below vein 4; the subterminal line defined by dark suffusion before it and the pale terminal area, minutely waved, angled outwards at vein 7 and excurved at middle; a terminal series of dark points. Hind wing fuscous brown; the underside with the costal area reddish irrorated with brown, a small discoidal spot and sinuous diffused postmedial line.

Ab. 1. *cuprina*. Head, thorax, and fore wing much darker red; hind wing black-brown.

Hab. Sikhim (*Lidderdale*, *Dudgeon*), 2 ♂, 2 ♀, type *cuprina*. *Exp.* 40 millim.

632. Hermonassa cecilia.

Hermonassa cecilia, Butl. A. M. N. H. (5) i. p. 164 (1874); id. Ill. Het. B. M. iii. p. 14, pl. xliv. ff. 7-9.
Opigena arenosa, Butler, Trans. Ent. Soc. 1881, p. 179.

Head and thorax dark red-brown, the tips of tegulæ and dorsal crests with some yellowish, tegulæ with slight blackish and white medial line; tibial spurs and tarsi with yellowish rings; abdomen dark brown. Fore wing dark red-brown slightly irrorated with black; the subbasal line greyish, with black marks on each side of it below costa and cell; a short orange streak on subcostal nervure and oblique striga across cell before the antemedial line, which is double, black filled in with greyish, angled outwards below costa and more strongly above inner margin; stigmata blackish, with orange annuli defined by black, the claviform bisected by the antemedial line and pointed towards base, the orbicular diamond-shaped; a slight medial shade angled outwards to lower angle of cell; the postmedial line double, filled in with grey, dentate and produced to points on the veins, bent outwards below costa, slightly angled inwards in discal fold and incurved below vein 4; the subterminal line defined by fuscous on inner side, most prominently at costa, angled outward at vein 7 and excurved at middle; a terminal series of black points. Hind wing fuscous brown, the cilia pale at tips; the underside paler, the costal area ochreous irrorated with fuscous, a small discoidal spot, sinuous postmedial line, and traces of subterminal line.

Hab. Japan, Tokio (*Jonas*), 1 ♂, 1 ♀, type *arenosa*, Yokohama (*Maries*, *Pryer*), 3 ♂, 3 ♀ type, Hakodate, 1 ♀; C. China, Kiukiang (*Pratt*), 2 ♂. *Exp.* 40–42 millim.

633. Hermonassa spilota. (Plate LXVIII. fig. 20.)

Ochropleura spilota, Moore, P. Z. S. 1867, p. 55; Hmpsn. Moths Ind. ii. p. 197.

♂. Head and thorax rufous; palpi blackish at sides except towards tips; tegulæ with black line near base and grey tips; abdomen ochreous, the ventral surface tinged with fuscous. Fore wing pale purplish red, the costal area to beyond middle and cell suffused with ochreous, the veins streaked with ochreous; the subbasal line represented by two oblique black striæ from cell; stigmata deep black edged with ochreous, the claviform elongate, elliptical, pointed at base, below which there are some black scales; orbicular elongate, pointed at extremities; reniform a lunule with pointed extremities; the postmedial line very indistinct, double, angled outwards below costa, then incurved, obsolete below claviform; the postmedial line indistinct, double, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line defined by slight fuscous suffusion on its inner side, slightly angled outwards at vein 7; a terminal series of black points. Hind wing whitish, tinged with pale brown towards termen; a fine dark terminal line; the underside with the costal area suffused with brown, a small dark discoidal point.

Hab. Bengal (*Russell*), 1 ♂ type. *Exp.* 30 millim.

634. Hermonassa incisa. (Plate LXVIII. fig. 22.)

Hermonassa incisa, Moore, Lep. Atk. p. 120 (1882); Hmpsn. Moths Ind. ii. p. 197.

Head pale rufous; thorax olive-yellow slightly irrorated with black, the tegulæ tipped with rufous; legs rufous; abdomen ochreous brown. Fore wing olive-yellow slightly irrorated with rufous; the costal edge rufous; the subbasal line defined by black spots on each side of it below costa and cell; the antemedial line double, brownish with black points on each side of it below costa, angled outwards below costa, then incurved to above inner margin, where it is strongly angled outwards, bisecting the claviform, which is diamond-shaped and defined by fine double black lines; orbicular and reniform black, their annuli defined by black, the former triangular; an oblique waved medial shade from lower angle of cell to inner margin; the postmedial line double, minutely and irregularly dentate, bent outwards below costa, angled inwards in discal fold, incurved below vein 4; the subterminal line pale, defined by brown suffusion on inner side, minutely waved, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing whitish tinged with ochreous, especially towards margins.

Hab. Sikhim, 1 ♀ type. *Exp.* 38 millim.

Subsp. 1. Much darker; thorax largely mixed with black; fore wing fuscous, the basal area and the costal area to beyond middle suffused with olive-green; hind wing tinged with fuscous.

Hab. Kashmir, Rala (*McArthur*), 1 ♂, Barra Larcha, 1 ♂; Punjab, Thundiani (*Yerbury*), 1 ♀, Dalhousie, 1 ♀, Dharmsála (*Hocking*), 1 ♂; Tibet, Yatung (*Hobson*), 1 ♂, 1 ♀.

635. Hermonassa lanceola. (Plate LXVIII. fig. 21.)

Hadena lanceola, Moore, P. Z. S. 1867, p. 59; Hampsn. Moths Ind. ii. p. 197.

Head and thorax bright olive-green; abdomen fuscous brown with some blackish lateral marks, the ventral surface pale greenish. Fore wing bright olive-green; the subbasal line formed by double black striæ from costa and median nervure, with a black streak in submedian fold to the double waved antemedial line, which is angled outwards below costa and more strongly above inner margin; stigmata deep black with their annuli defined by black, the claviform elongate, the orbicular triangular; a minutely dentate medial line angled outwards to lower angle of cell; the postmedial line double, minutely dentate, bent outwards below costa, slightly angled inwards in discal fold and incurved below vein 4; the subterminal line pale defined by fuscous brown on inner side, minutely dentate, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pale fuscous, somewhat whitish towards base; the underside with the costal area greenish irrorated with fuscous, a black discoidal lunule and diffused sinuous post-medial line.

Hab. Sikhim (*Russell*, *Dudgeon*), 3 ♂, 1 ♀ type. *Exp.* 34–38 millim.

636. Hermonassa consignata.

Hermonassa consignata, Wlk. xxxii. 632 (1865); Hmpsn. Moths Ind. ii. p. 196; Staud. Cat. Lep. pal. p. 142.
Hermonassa chalybeata, Moore, P. Z. S. 1881, p. 353, pl. 38. f. 17; Hmpsn. Moths Ind. ii. p. 197.
Hermonassa lunata, Moore, Lep. Atk. p. 120 (1882).

Head and thorax red-brown with a slight olive tinge and a few blue-grey scales; abdomen grey-brown. Fore wing red-brown with a slight olive tinge and irrorated with blue-grey; the subbasal

Fig. 67.—*Hermonassa consignata*, ♂. ½. (From Moths Ind. vol. ii.)

line represented by pale strigæ from costa and cell defined on each side by black marks; the antemedial line pale, slight, defined by black scales and more prominent marks at costa, angled outwards below costa, then incurved to above inner margin, where it is more

strongly angled outwards; claviform represented by a pale-edged deep black triangular mark on inner side of antemedial line and conical mark on outer side; orbicular and reniform deep black with pale annuli, the former rounded or elliptical; the postmedial line pale, defined on each side by black, minutely and irregularly dentate, angled inwards below costa and in discal fold, incurved below vein 4; some pale points on costa towards apex; the subterminal line defined by dark suffusion on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing whitish tinged with brown, especially towards termen, and with fine brown terminal line; the underside with the costal area suffused with brown.

Ab. 1. Fore wing more ferruginous red, without blue-grey irroration, some black suffusion in cell before and between the stigmata.

Ab. 2. Paler; head, thorax, and basal half of fore wing pale olive-greenish; abdomen and hind wing whitish, the former with the anal tuft rufous.

Ab. 3. *lunata*. Tegulæ black or with black line at base; fore wing brown suffused with purple, and without blue-grey irroration; claviform often minute or absent, orbicular more triangular.—Kuku-noor, Kashmir, Thundiani.

Ab. 4. *chalybeata*. Smaller; fore wing fuscous irrorated with blue-grey, the markings less distinct, claviform minute or absent.—Yatung.

Hab. Tibet, Kuku-noor, 1 ♂, Amdo, Yatung (*Hobson*), 6 ♂, 6 ♀; Kashmir, Rala (*McArthur*), 2 ♂, 2 ♀, Goorais Valley (*Leech*), 3 ♂, (*Thompson*) 1 ♂, 1 ♀, type *lunata*; Punjab, Thundiani (*Yerbury*), 1 ♀; Sikhim (*Lidderdale, Elwes*), 5 ♂, 8 ♀, type. *Exp.* 26–34 millim.

637. Hermonassa clava. (Plate LXVIII. fig. 23.)

Graphiphora clava, Leech, Trans. Ent. Soc. 1900, p. 38.

♂. Head and thorax pale rufous, with some white scales on vertex of head, at extremity of tegulæ, and upper edge of patagia; palpi with some black at sides; tibiæ and tarsi with some black and ringed with white; abdomen pale brownish grey, the ventral surface tinged with rufous and fuscous. Fore wing pale rufous, slightly irrorated with black; the subbasal line white from costa to submedian fold, defined on each side by black striæ from costa and median nervure; blackish spots above and below submedian fold before the waved white antemedial line, which is slightly defined by black scales and by two prominent striæ from costa, angled outwards above inner margin; claviform, orbicular, and reniform deep black, with whitish annuli slightly defined by black scales; claviform moderate; orbicular and reniform rather small, the former rounded; a waved diffused medial fuscous line slightly angled at median nervure; postmedial line double, filled in with whitish, dentate and produced to points on the veins, bent outwards below costa, excurved

to vein 4, then incurved; the subterminal line angled outwards at vein 7 and excurved at middle, defined by fuscous suffusion on inner side and by black with white points on it at costa; a terminal series of small black lunules. Hind wing white tinged with brown, especially towards termen, the veins and a fine terminal line brown; the underside with the costal area irrorated with fuscous, a small discoidal lunule and postmedial line and subterminal band on costal area.

Hab. W. China, Pu-tsu-fang, 1 ♂ type. *Exp.* 36 millim.

638. **Hermonassa pallidula.** (Plate LXVIII. fig. 24.)

Graphiphora pallidula, Leech, Trans. Ent. Soc. 1900, p. 39.

♂. Head whitish mixed with black; thorax whitish, rufous, and black; abdomen brownish ochreous, with some black at sides. Fore wing ochreous white, slightly tinged with rufous and irrorated with black; a double, waved, dark-brown subbasal line from costa to submedian fold, with black point on its outer edge; a double, waved, brown antemedial line; orbicular and reniform rather small, deep black, with pale annuli defined by black, the former round or elliptical; a diffused waved medial line angled outwards to lower angle of cell; postmedial line double, minutely waved and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line angled outwards at vein 7 and excurved at middle, slightly defined by fuscous on inner side and with a small triangular black spot at costa; a terminal series of black points. Hind wing whitish tinged with fuscous, the underside whitish, the costal area irrorated with fuscous, a small discoidal lunule and diffused postmedial and subterminal lines on costal area.

Hab. W. China, Omei-shan, 3 ♂ type. *Exp.* 34 millim.

Genus **OPIGENA.**

	Type.
Opigena, Boisd. Ind. Meth. p. 103 (1840)	*polygona.*

Proboscis fully developed; palpi upturned, the 2nd joint with long pointed tuft at extremity in front, the 3rd with pointed tuft in front; eyes large, rounded; frons and vertex of head with tufts of scales; antennæ ciliated, the basal joint with tuft of scales; thorax clothed with scales, a double dorsal crest, expanding into spreading crests on pro- and metathorax; tibiæ spined; abdomen dorsally flattened. Fore wing long and narrow, the margins subparallel, the apex rounded; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

639. **Opigena polygona.**

Noctua polygona, Schiff. Wien. Verz. p. 78 (1776); Fabr. Mant. Ins. ii. p. 176 (1787); Hübn. Samml. Eur. Schmett., Noct. f. 125; Godt. Lép. Fr. ii. p. 245, pl. 68. f. 1; Staud. Cat. Lep. pal. p. 135.
Noctua nigrofulva, Esp. Schmett. iv. pl. 127. f. 7 (1788).
Noctua pyramis, Bork. Eur. Schmett. iv. p. 197 (1792).

Head and thorax rufous, the tegulæ with some grey, the patagia

with some ochreous scales and the dorsal crests tipped with ochreous, the tegulæ with black medial line and the patagia with black line above; tibiæ and tarsi blackish, with whitish rings; abdomen ochreous, suffused and irrorated with fuscous. Fore wing purplish rufous, the inner half of medial area suffused with ochreous; a double, waved, black subbasal line from costa to submedian fold, filled in with ochreous and with some ochreous and black beyond it below the cell; a double, oblique, waved black antemedial line, filled in with ochreous and slightly angled outwards below costa; claviform defined by black above; orbicular and reniform with ochreous centres and slight ochreous annuli defined by black, the former oblique, elliptical, the lower part of cell before and between them

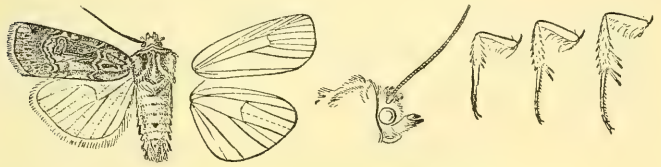


Fig. 68.—*Opigena polygona*, ♂. ½.

black; a slight oblique shade from lower angle of cell to inner margin; the subterminal line double, minutely dentate, bent outwards below costa, slightly angled inwards in discal fold, incurved below vein 4, the veins beyond it with slight ochreous streaks; the subterminal line ochreous, minutely waved, angled outwards at vein 7 and excurved at middle, defined on inner side by two small dentate black marks and a few scales at middle; a brown terminal line. Hind wing yellowish tinged with brown, the veins brown; cilia pale yellow, with brownish line at base; the underside whitish, the costal area irrorated with brown, traces of a sinuous postmedial line distinct on costal area.

Hab. France, Sand Coll.; Germany, Zeller Coll.; Austria, Tirol, Leech Coll.; Switzerland, Frey Coll.; Italy; Russia, Livonia, Zeller Coll.; Pontus, Taskent, 1 ♂; Turcomania; Siberia. *Exp.* 38–42 millim.

Larva. Kirby, Eur. Butt. & Moths, p. 189.

Green; a dark green lateral stripe edged with white; a whitish subbasal line on thoracic somites. 5.

Genus **AGROTIS.**

	Type.
Agrotis, Ochs. Schmett. Eur. iv. p. 66 (1816), non descr.; Treit. Schmett. Eur. v. (1) p. 125 (1825)	*rectangula.*
Graphiphora, Ochs. Schmett. Eur. iv. p. 68 (1816), non descr.	*ravida.*
Caradrina, Ochs. Schmett. Eur. iv. p. 80 (1816), non descr.; Treit. Schmett. Eur. v. (II.) p. 246 (1825)	*glareosa.*
Noctua, Treit. Schmett. Eur. v. p. 206 (1825), nec Linn.	*ravida.*
Diarsia, Hübn. Verz. p. 222 (1827)	*dahli.*
Megasema, Hübn. Verz. p. 222 (1827)	*triangulum.*
Ochropleura, Hübn. Verz. p. 223 (1827)	*musiva.*

	Type.
Eugraphe, Hübn. Verz. p. 224 (1827)	*signa.*
Oggia, Hübn. Verz. p. 224 (1827)	*flammatra.*
Chersotis, Boisd. Ind. Meth. p. 103 (1840)	*rectangula.*
Spælotis, Boisd. Ind. Meth. p. 106 (1840)	*augur.*
Dichagyris, Led. Noct. Eur. p. 206 (1857)	*melanura.*

Proboscis fully developed; palpi obliquely upturned, the 2nd joint broadly scaled in front, the 3rd with small tuft of hair; eyes smooth, large, round; frons smooth; antennæ of male typically ciliated; head and thorax clothed with hair and scales, and with crests on vertex of head and on pro- and metathorax; fore tibiæ finely spined at sides; mid and hind tibiæ spined; abdomen dorsally rather flattened, clothed with rough hair towards base, and with lateral tufts towards extremity. Fore wing rather narrow, the apex rectangular; veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base.

Sect. I. Antennæ of male bipectinate, with rather long branches to apex.

A. Tegulæ black except at base	*badinodis.*
B. Tegulæ with dark medial line	*subrosea.*

640. Agrotis badinodis. (Plate LXVIII. fig. 25.)

Agrotis badinodis, Grote, Can. Ent. vi. p. 13 (1874); Smith, Cat. Noct. N. Am. p. 65.

Head and thorax rather pale red-brown; palpi blackish at sides except at tips; tegulæ black, mixed with rufous towards base; tibiæ and tarsi blackish; abdomen pale red-brown, the ventral surface tinged with fuscous. Fore wing reddish brown, slightly irrorated with fuscous and tinged with fuscous towards costa and termen; an indistinct slightly curved subbasal line from costa to submedian fold; a blackish antemedial line slightly angled outwards below costa, then almost straight and erect, with a small, somewhat conical, deep black spot on it in cell; claviform only represented by a black point at its extremity; orbicular and reniform only defined by a quadrate brown spot between them in the cell edged before and behind by black; an indistinct fuscous medial line excurved from costa to lower angle of cell, then oblique; an almost evenly curved fuscous postmedial line defined by ochreous on outer side, the area between it and the indistinct subterminal line fuscous, the latter excurved at vein 7 and middle; some pale points on costa towards apex; a terminal series of black points. Hind wing greyish suffused with fuscous brown, the cilia whitish; the underside brownish grey, irrorated with fuscous, a black discoidal lunule and curved diffused postmedial line.

Hab. Canada, 2 ♂, 1 ♀; U.S.A., Northern, Eastern, and Middle States, Washington, D.C. (*Koebele*), 1 ♂, New York, Maryland, Texas. *Exp.* 40 millim.

641. Agrotis subrosea.

Graphiphora rhomboidea, Steph. Ill. Brit. Ent., Haust. ii. p. 128 (1829), nec Esp.

Graphiphora subrosea, Steph. Ill. Brit. Ent., Haust. ii. p. 200 (1829);

Herr.-Schäff. Eur. Schmett., Noct. ff. 516, 622, vi. p. 59; Staud. Cat. Lep. pal. p. 135.
Agrotis subcærulea, Staud. Cat. p. 80 (1871).

Head and thorax grey mixed with red-brown; palpi dark brown above; frons black; tegulæ with dark medial line; abdomen grey irrorated with brown. Fore wing grey irrorated with reddish brown; a waved subbasal blackish line from costa to submedian fold; an oblique waved antemedial line; hardly a trace of the claviform; orbicular and reniform grey irrorated with brown and

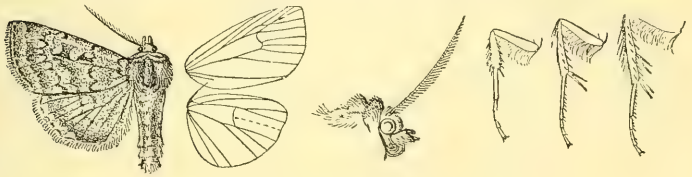


Fig. 69.—*Agrotis subrosea*, ♂. ½.

slightly defined by blackish, the former round, the cell before and between them black, or with black fascia above median nervure with rufous above it; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line defined by dark suffusion on its inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing yellowish, suffused and irrorated with fuscous brown especially on terminal area; the underside with small discoidal spot and sinuous postmedial line.

Hab. Britain, fens (*olim*); Germany, E. Prussia; Sweden; Russia, Zeller & Frey Colls.; Amurland. *Exp.* 38 millim.

Larva. Meyr. Lep. Brit. p. 97; Barrett, Brit. Lep. iv. p. 81, pl. 144. f. 3.

Rosy-grey or purplish-grey; dorsal and subdorsal lines pale; spiracular line bright yellow; head and thoracic plate red-brown. Food-plants: *Myrica*, *Salix*, and *Andromeda*. 9–5.

Sect. II. Antennæ of male bipectinate, with moderate branches, the apical part ciliated.

A. Fore wing with the reniform not filled in with black ..... *hemileuca*.
B. Fore wing with the reniform filled in with black ..... *consentanea*.

642. Agrotis hemileuca.

Agrotis hemileuca, Wlk. Tr. N. H. Soc. Glasg. i. p. 348 (1873).

♂. Head and thorax red-brown; palpi blackish at sides; tegulæ with obscure black medial line; tarsi banded with black; abdomen ochreous white, the anal tuft brown, the ventral surface white. Fore wing red-brown, suffused and irrorated with fuscous; a dentate black subbasal line from costa to vein 1; a diffused waved antemedial line, angled outwards below costa and very strongly above inner margin; claviform small, defined by black; orbicular

and reniform pale defined by black, the former small, elliptical, the latter with fuscous centre, a diffused medial shade passing between them; a black streak from the reniform to postmedial line, which is dentate, slightly bent outwards below costa, excurved to vein 4, then oblique and incurved in submedian fold; the subterminal line

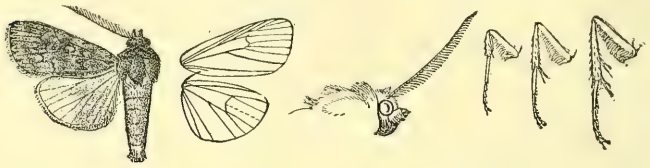


Fig. 70.—*Agrotis hemileuca*, ♂. ½.

defined by dentate blackish spots before and beyond it; a terminal series of black points. Hind wing pure white, some dark points on medial part of termen.

Hab. Congo, 1 ♂, type. *Exp.* 36 millim.

*643. Agrotis consentanea. (Plate LXIX. fig. 25.)

Agrotis consentanea, Mab. Ann. Soc. Ent. Belge, xxiii. p. cvii (1880).

♂. Head and thorax ochreous tinged with rufous; palpi blackish at sides; tegulæ with the basal half irrorated with black; tibiæ and tarsi banded with black; abdomen ochreous. Fore wing ochreous, tinged with rufous and sparsely irrorated with black; the subbasal line represented by two black spots on costa, the antemedial line by two black spots on costa, a spot below the cell, and an angle above inner margin; claviform and orbicular obsolete; reniform large, filled in with black and traversed by the medial shade, which is angled at lower angle of cell; postmedial line obsolescent, dentate, bent outwards below costa, excurved to vein 4, then incurved, the costa beyond it black with some pale points; subterminal line represented by an ill-defined series of dentate black marks, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules. Hind wing pure white, with a fine brown terminal line.

Hab. Madagascar, Foulepointe, type † ♂ in Coll. Mabille. *Exp.* 40 millim.

Sect. III. Antennæ of male bipectinate with short branches, the apical part ciliated.

A. Frons black ..... *opacifrons.*
B. Frons not black.
  a. Tegulæ with medial black line.
    a^1. Fore wing with wedge-shaped black mark from outer edge of reniform.
      a^2. Fore wing with black fascia between orbicular and reniform ..... *spina.*
      b^2. Fore wing without black fascia between orbicular and reniform ..... *ypsilon.*

b^1. Fore wing with slight black streaks from outer edge of reniform ..... *tocionis*.
c^1. Fore wing without black marks from outer edge of reniform.
a^2. Fore wing with the cell black between orbicular and reniform ..... *geniculata*.
b^2. Fore wing with the cell not black between orbicular reniform.
a^3. Fore wing fuscous suffused with purplish grey ... *plana*.
b^3. Fore wing grey suffused with purplish red..... *subcorticea*.
b. Tegulæ without medial black line.
a^1. Fore wing with the ground-colour grey.
a^2. Fore wing with the lines entire.
a^3. Fore wing with the postmedial line dentate ..... *cissigma*.
b^3. Fore wing with the postmedial line not dentate... *violaris*.
b^2. Fore wing with the lines reduced to points on the veins ..... *dapsilis*.
b^1. Fore wing with the ground-colour pale ochreous ..... *aurulenta*.

644. Agrotis opacifrons. (Plate LXVIII. fig. 26.)

Agrotis opacifrons, Grote, Bull. Geol. Surv. iv. p. 170 (1878); Smith, Cat. Noct. N. Am. p. 61.

Head and thorax red-brown, the scales tipped with grey; frons deep black; tibiæ and tarsi blackish, the latter with pale rings; abdomen grey-brown, the anal tuft tinged with fulvous. Fore wing grey, tinged with purplish brown and irrorated with black; a subbasal black striga from costa and point below the cell; an antemedial striga from costa and points in and below cell, then with traces of a waved line; orbicular defined by black and open above, either narrow **U**-shaped or semicircular; reniform with its centre and circumference slightly defined by fuscous; a black streak above median nervure from the antemedial line to the reniform; postmedial line rather indistinct, strongly bent outwards below costa, then strongly dentate and incurved between veins 3 and 1; traces of an irregularly waved subterminal line; some black points on termen. Hind wing pale, strongly irrorated and suffused with fuscous, especially on terminal area; cilia whitish; the underside with discoidal lunule and curved postmedial line.

Hab. U.S.A., New York, 1 ♂, 1 ♀, type. *Exp.* 42 millim.

645. Agrotis spina. (Plate LXVIII. fig. 27.)

Agrotis spina, Guen. Noct. i. p. 269 (1852).
Mamestra nitida, Wlk. xxxii. 668 (1865).
Mamestra tenebrosa, Wlk. xxxii. 669 (1865).
Agrotis vastator, Scott, Trans. Ent. Soc. N.S.W. ii. p. 40 (1869).

♂. Head and thorax reddish brown mixed with white; tegulæ fuscous in front and with black medial line; pectus and legs largely mixed with white; abdomen grey-brown, the ventral surface strongly irrorated with white. Fore wing grey-brown, irrorated with fuscous and suffused with rufous towards costa; a double, waved, subbasal line from costa to submedial fold; a double, waved, antemedial line more strongly angled outwards above inner margin;

claviform small, defined by black; orbicular and reniform with fuscous centres and grey annuli defined by black, the former round, a black fascia between them in cell continued beyond the reniform to the postmedial line; an obscure waved medial line from cell to inner margin; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line very indistinct, angled outwards at vein 7 and excurved at middle, the area beyond it rather darker; a terminal series of black points. Hind wing pale suffused with brown especially on costal and terminal areas; the veins brown; cilia white with a brown line through them; the underside whiter, the costal area irrorated with fuscous, a black discoidal spot and prominent black apical patch.

♀. Head, thorax, and fore wing darker.

Hab. Queensland, Brisbane (*Turner*), 1 ♂; N.S.W., Moreton Bay (*Diggles*), 2 ♀, type *nitida*, Sydney (*Diggles*, *Scott*, *Mathew*), 3 ♂, 9 ♀, type *tenebrosa*; Victoria, Gisborne (*Lyell*), 1 ♂, Melbourne (*Lucas*), 1 ♀; S. Australia (*Bakewell*), 1 ♀; Tasmania, 2 ♀. *Exp.* 40–50 millim.

646. Agrotis ypsilon.

Noctua ypsilon, Rott. Naturf. ix. p. 141 (1776); Druce, Biol. Centr-Am., Het. i. p. 281; Hmpsn. Moths Ind. ii. p. 182; Smith, Cat. Noct. N. Am. p. 66; Staud. Cat. Lep. pal. p. 151.
Noctua suffusa, Schiff. Wien. Verz. p. 80 (1776); Fabr. Mant. Ins. ii. p. 157; Moore, Lep. Ceyl. iii. pl. 147. f. 6; Feld. Reis. Nov. pl. 109. f. 34.
Phalæna idonea, Cram. Pap. Exot. iii. pl. 275 H (1782).
Bombyx spinula, Esp. Schmett. iii. pl. 63. ff. 6, 7 (1782).
Noctua robusta, Blanch. Gay's Chile, p. 75, pl. 6. f. 9 (1852).
Agrotis bipars, Wlk. x. 334 (1856).
Agrotis frivola, Wllgrn. Wien. ent. Mon. iv. p. 169 (1860).
Agrotis suffusa, var. *pepoli*, Bert. Bull. Ent. Ital. vi. pp. 139–146, pl. iii. (1874).
Agrotis aureolum, Schaus, J. N. Y. Ent. Soc. vi. p. 107 (1898).

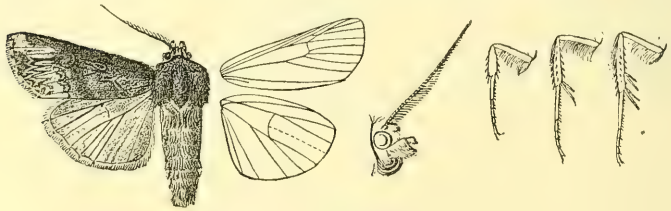


Fig. 71.—*Agrotis ypsilon*, ♂. ½.

Head and thorax red-brown, the latter suffused with fuscous; frons with blackish bar above; back of head with two black spots; tegulæ with brown and black medial band; pectus whitish; tibiæ and tarsi ochreous white and black; abdomen grey-brown. Fore wing ochreous irrorated with brown; the costal area suffused with fuscous brown, and often the whole wing to the postmedial line; a double, waved, subbasal line from costa to the submedian fold; a

double, waved, antemedial line dentate inwards on median nervure and vein 1 and outwards above inner margin; claviform moderate or small, defined by black; orbicular and reniform defined by black and with fuscous centres, the former small, elliptical, or with its outer edge produced to a point, the latter with wedge-shaped black spot from its outer edge; an indistinct dentate medial line; a double minutely dentate postmedial line produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; a subterminal series of pale and black dentate marks, those above veins 4, 5 with the black on their inner side stronger and some fuscous suffusion on their outer; the veins towards termen with dark streaks; a terminal series of points. Hind wing semihyaline white, the veins, costal and inner areas, and termen tinged with brown, strongly in female and in the N.-Zealand form.

Hab. Canada, Hudson's Bay (*Barnston*), 2 ♂, Nova Scotia (*Redman*), 1 ♂, W. Canada, Orilla (*Bush*), 1 ♀; U.S.A., Philadelphia (*Doubleday*), 1 ♂, Massachusetts, Beverly, 2 ♂, N. York, 1 ♂, 1 ♀, Kansas, 3 ♀; Mexico, Jalapa (*Hoege*), 1 ♂, Milpas (*Forrer*), 2 ♀; Guatemala (*Champion*), 1 ♀; Costa Rica (*Rogers, Underwood*), 2 ♂, 5 ♀; Venezuela, 1 ♂, 2 ♀, type *bipars*; Brazil, Castro Paraña, type † ♂ *aureolum*, in Coll. Schaus; Peru, Coquimbo (*J. J. Walker*), 1 ♂, 2 ♀; Chile, type † ♂ *robusta* in Mus. Paris; Argentina; Europe, Britain, France, Germany, Zeller Coll., Switzerland, Frey Coll., Livonia, Zeller Coll.; Syria, Beirut (*Lederer*), 1 ♂, 1 ♀; Egypt, Suez (*J. J. Walker*), 1 ♀; Natal, Estcourt (*Hutchinson*), 1 ♂; Japan, Yokohama (*Pryer*), 1 ♂, Tokio (*Maries*), 1 ♀, Kobi (*Lewis*), 1 ♀, Kiushiu, 1 ♂; E. China, Shanghai, 2 ♂, 2 ♀, Chusan (*J. J. Walker*), 2 ♂; W. China, Kiukiang (*Pratt*), 1 ♂, 1 ♀, Ichang (*Pratt*), 1 ♀, Chang-yang (*Pratt*), 2 ♀, Washan (*Pratt*), 1 ♂, 1 ♀, Kwei-chow, 1 ♂, Chia-kou-ho, 1 ♀, Ta-chien-lu, 1 ♂, Pu-tsu-fang, 1 ♀, Moupin (*Krickeldorf*), 1 ♀; Tibet, Yatung (*Hobson*), 1 ♂; Kashmir, Scind Valley (*Leech*), 1 ♂, 1 ♀; Kulu, Sultanpur (*Young*), 1 ♂, 1 ♀; N.W. Himalayas, Rawul Pindi (*Yerbury*), 1 ♂, Thundiani (*Yerbury*), 1 ♂, 1 ♀, Kalabagh (*Yerbury*), 1 ♀, Landur (*Hearsey*), 1 ♂, Simla, 1 ♂, 1 ♀, Dharmsála (*Hocking*), 3 ♂, 2 ♀, Mynpuri, 1 ♂, Dehra Dhun, 1 ♀; Ceylon, 1 ♀; Java (*Horsfield*), 1 ♂; Queensland, Brisbane (*Turner*), 2 ♂, 1 ♀; N. Zealand, Auckland (*Oxley*), 4 ♂, 4 ♀, Dunedin (*Purdie*), 1 ♀; Hawaii (*Blackburn, Perkins*), 4 ♂, 2 ♀. *Exp.* 40–50 millim.

Larva. Marten, Trans. Dept. Agr. Ill. xviii. App. p. 134, 1880; Meyr. Brit. Lep. p. 91; Barrett, Lep. Brit. iii. p. 285, pl. 124. f. 2.

Head light brown, vertical band dark; dark greasy grey to dull leaden-brown; a faint dirty yellowish-white dorsal line; subdorsal line more distinct; two indistinct pale lines on the sides. Tubercles black.

A general feeder.—H. G. D.

647. Agrotis tocionis. (Plate LXVIII. fig. 28.)

Agrotis tokionis, Butl. Trans. Ent. Soc. 1881, p. 178.

Head and thorax reddish brown; palpi blackish at sides; tegulæ with black medial line, the posterior part purplish grey; abdomen fuscous brown. Fore wing grey-brown or reddish brown; the costal area suffused with black; the cell suffused with purplish grey except the lower medial part; a double black subbasal line from costa to submedian fold, interrupted at cell; a double antemedial line angled outwards below costa and cell and more strongly above inner margin; claviform moderate, defined by black; orbicular and reniform purple-grey defined by black, the former diamond-shaped or with its outer side produced to a point, the latter large and with short black streaks from its outer edge; the postmedial line double, dentate, produced to black and pale points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the veins of terminal area streaked with black; the subterminal line pale, minutely waved, angled outwards at vein 7 and excurved at middle, the area beyond it tinged with fuscous; a terminal series of small black spots. Hind wing fuscous brown, the interspaces sometimes paler except towards costa and termen; cilia ochreous brown; the underside paler, with slight discoidal point and indistinct curved postmedial line.

Hab. Japan, Tokio (*Maries*, *Jonas*), 2 ♂, Yokohama (*Manley*), 1 ♂, 2 ♀, Oiwake (*Pryer*), 4 ♂, 2 ♀, Kiushiu, 1 ♂, 2 ♀. *Exp.*, ♂ 44, ♀ 50 millim.

648. Agrotis geniculata. (Plate LXVIII. fig. 29.)

Agrotis geniculata, Grote & Rob. Trans. Am. Ent. Soc. i. p. 349, pl. 7. f. 54 (1868); Smith, Cat. Noct. N. Am. p. 66.

Head and thorax grey mixed with purplish fuscous; palpi black at sides; sides of frons with black spots; tegulæ with black medial line; abdomen grey and brown. Fore wing bluish grey, largely suffused with brown; a double, waved, black subbasal line from costa to vein 1, where it is recurved to base; a double antemedial line acutely angled outwards below costa and above inner margin, excurved in and below cell; claviform well developed and defined by black; orbicular and reniform grey defined by black, and with the cell black before and between them, the former open above, the latter moderate; the postmedial line double, minutely waved, bent outwards below costa, dentate inwards to the reniform in discal fold and incurved in submedian fold; the terminal area darker; the subterminal line grey, angled outwards at vein 7 and inwards in discal fold, then excurved; a terminal series of small lunules. Hind wing pale, strongly suffused with brown, the terminal area darker; cilia white, brown at base; the underside whitish irrorated with brown; a dark discoidal point; the terminal area suffused with brown.

Hab. Canada; U.S.A., Northern, Eastern, and Middle States, Massachusetts, 1 ♂, 1 ♀, Washington. *Exp.* 38 millim.

649. Agrotis plana. (Plate LXVIII. fig. 30.)

Agrotis plana, Leech, Trans. Ent. Soc. 1900, p. 26.

♂. Head and tegulæ rufous mixed with grey and black; palpi black at sides; tegulæ with black medial line, with some white scales beyond it; thorax black-brown, the scales and hairs tipped with grey; tarsi ringed with white; abdomen ochreous brown, the ventral surface dark brown irrorated with white. Fore wing dark brown suffused with purplish grey; the lines indistinct; the subbasal line from costa to submedian fold, angled outwards below costa; the antemedial line angled outwards below costa, in submedian fold, and above inner margin; claviform almost obsolete; orbicular and reniform large, with black centres and pale annuli defined by black, the former round, the latter somewhat constricted at middle; the postmedial line minutely dentate, strongly bent outwards below costa, excurved to vein 4, then oblique and angled inwards in submedian fold; traces of a waved subterminal line; a terminal series of black points. Hind wing pale brown, whitish towards base and inner margin; the underside with the costal area strongly irrorated with brown, a discoidal lunule and indistinct sinuous postmedial line.

Hab. W. China, Pu-tsu-fang, 3 ♂ type, Nitou, 1 ♂, Omei-Shan, 2 ♂. *Exp.* 38 millim.

650. Agrotis subcorticea.

Agrotis subcorticea, Staud. Iris, viii. p. 311 (1895); id. Cat. Lep. pal. p. 151.
Agrotis parvula, Alph. Rom. Mém. ix. p. 9, pl. 3. f. 1 (1897).

♂. Head ochreous, the antennæ and a band between their bases red-brown, the palpi dark, fringed with rufous in front, the lower part of frons purplish red; tegulæ ochreous, with dark brown medial line and reddish tips; thorax fuscous mixed with grey; tarsi with pale rings; abdomen fuscous brown, the anal tuft and ventral surface reddish. Fore wing grey suffused with purplish red, and before the antemedial and subterminal lines with brown; subbasal line straight from costa to submedian fold; antemedial line double, the inner indistinct, angled outwards below costa, excurved below cell and more strongly above inner margin; claviform represented by a few brown scales at its extremity; orbicular and reniform large, with fuscous centres and greyish annuli defined by fine brown lines, the former round; a waved medial rather diffused line; postmedial line double, waved, bent outwards below costa, somewhat incurved at discal fold, incurved at vein 4; subterminal line defined by the brown suffusion before it, slightly dentate at veins 7, 6, 4, 3, then incurved; a fine terminal line; cilia brown. Hind wing fuscous brown, rather paler towards base and inner margin; both wings with a fine yellowish line at base of cilia; the underside whitish, the costal and terminal areas tinged with brown, a slight discoidal spot and sinuous postmedial line.

Hab. Tibet, Amdo, Kuku-noor, 1 ♂. *Exp.* 34 millim.

651. Agrotis cissigma. (Plate LXVIII. fig. 31.)

Noctua cissigma, Mén. Schrenck's Reise im Amurlande, p. 58, pl. 4. f. 9 (1859); Staud. Cat. Lep. pal. p. 140.
Agrotis umbra, Staud. Rom. Mém. vi. p. 411 (1892).

Head and thorax red-brown mixed with grey, the head and tegulæ mostly grey; palpi black, whitish at tips; abdomen grey-brown; pectus and legs mostly fuscous. Fore wing red-brown suffused with purplish grey; a waved subbasal line from costa to submedian fold; a dark antemedial line dentate from costa to median nervure, then waved; stigmata obsolete; a diffused medial shade excurved at middle; the postmedial line dentate, slightly bent outwards below costa, oblique to vein 4, then inwardly oblique; the subterminal line defined by fuscous suffusion on its inner side, angled outwards at middle; some pale points on costa towards apex; a terminal series of dark points. Hind wing yellowish suffused with brown, with slight discoidal lunule and sinuous postmedial and subterminal lines more distinct on underside; a fine terminal line.

Hab. W. Siberia, Urals, 1 ♂, 1 ♀; Amurland, 1 ♂, 1 ♀; Corea. *Exp.* 40 millim.

652. Agrotis violaris. (Plate LXVIII. fig. 32.)

Agrotis violaris, Grote & Rob. Trans. Am. Ent. Soc. i. p. 353, pl. 7. f. 59 (1868); Smith, Cat. Noct. N. Am. p. 66.

♂. Head and thorax violaceous grey pencilled with red-brown; palpi blackish at sides; tarsi black with pale rings; abdomen grey, thickly irrorated with dark brown. Fore wing violaceous grey, rather sparsely irrorated with red-brown, the area between the medial and postmedial lines tinged with brown; the costa dark; the antemedial line brown, angled outwards below costa and above inner margin and incurved between those points; claviform obsolete; orbicular almost obsolete, with slight brownish annulus, round; an obscure medial shade angled at lower angle of cell; reniform with pale annulus defined by brown and with some fuscous in lower part; the postmedial line defined by grey on outer side, bent outwards below costa, oblique to vein 6, then inwardly oblique; the subterminal line very indistinct, angled outwards at vein 7. Hind wing whitish, the veins and a discoidal lunule brown; an indistinct curved postmedial line with the area beyond it brown; the underside with the costal and terminal areas irrorated with brown; the discoidal spot and postmedial line distinct.

Hab. U.S.A., Middle States, 1 ♂, Pennsylvania. *Exp.* 42 millim.

*653. Agrotis dapsilis.

Agrotis dapsilis, Grote, Bull. Geol. Surv. vi. p. 582 (1883); Smith. Cat. Noct. N. Am. p. 67.

♂. Pale ash-grey irrorated with black. Fore wing with the

lines represented by blackish points on the veins; orbicular a small blackish spot; reniform narrow, erect, dusky; subterminal line only defined by a slight difference in colour between the postmedial and terminal areas. Hind wing pale, the terminal area tinged with fuscous.

Hab. U.S.A., Florida. *Exp.* 31 millim. This species is unknown to me.

654. Agrotis aurulenta. (Plate LXIX. fig. 26.)

Agrotis aurulenta, Smith, Bull. U.S. Nat. Mus. 38, p. 215 (1890); id. Cat. Noct. N. Am. p. 66.

Head and thorax pale ochreous; abdomen white, dorsally tinged with ochreous towards extremity. Fore wing pale ochreous; an indistinct curved postmedial series of dark points on the veins. Hind wing ochreous white; the veins and terminal area browner; cilia pure white.

Ab. 1. Fore wing suffused with rufous defining the pale lines, the antemedial line angled, the subterminal line irregular; the orbicular and reniform with pale annuli and fuscous-tinged centres, the former round.

Hab. U.S.A., Nebraska, 1 ♀, Colorado, Arizona. *Exp.* 40 millim.

Sect. IV. (*Ochropleura*). Antennæ of male serrate and fasciculate.

A. Tegulæ white at base, chocolate-brown at tips.
  a. Fore wing with the median nervure streaked with white ... *clarivena*
  b. Fore wing with the median nervure not streaked with white ..... *musiva*.
B. Tegulæ concolorous.
  a. Fore wing with purplish-brown oblong patch on middle of costal area, including the stigmata..... *exoleta*.
  b. Fore wing with the cell dark before and between the stigmata.
    a^1. Fore wing with the postmedial line not dentate ..... *glareosa*.
    b^1. Fore wing with the postmedial line dentate ..... *docilis*.
  c. Fore wing with the cell not dark before and between the stigmata ..... *castanea*.

*655. Agrotis clarivena. (Plate LXIX. fig. 27.)

Agrotis clarivena, Püng. Iris, xiii. p. 116, pl. 4. f. 8 (1899); Staud. Cat. Lep. pal. p. 254, add.

Head whitish and purple-brown; tegulæ whitish at base, with deep red-brown patch at tips; thorax pale rufous or mixed with grey; hind tibiæ and tarsi white above; abdomen grey, the ventral surface purplish brown irrorated with grey. Fore wing red-brown suffused with purplish grey; the costal area creamy-white to the postmedial line, the median nervure streaked with white; a triangular black patch below base of cell; antemedial line obsolete from costa to median nervure, then indistinct, double, excurved below cell and more strongly above inner margin, claviform very indistinctly defined by black above; orbicular white, **V**-shaped,

open above, connected or separate from the white on median nervure; reniform with fuscous centre, irrorated with white, and white annulus; the cell filled in with black-brown before and between the stigmata; postmedial line indistinct, minutely dentate, double, and filled in with pale colour, bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct, pale, defined by a dark shade on inner side at costa, angled outwards at vein 7, and dentate at veins 4, 3; a terminal series of small dark lunules. Hind wing pale yellowish suffused with fuscous brown, paler towards base; cilia whitish, pale brown at base; the underside whitish, with the costal area irrorated with brown, the terminal area suffused with brown, an indistinct curved postmedial line.

Hab. Tibet, Kuku-noor, type † in Coll. Püngeler. *Exp.* 42 millim.

656. Agrotis musiva.

Noctua musiva, Hübn. Eur. Schmett., Noct. f. 118 (1827); Dup. Lép. Fr. ii. p. 212, pl. 64; Steph. Ill. Brit. Ent., Haust. ii. p. 136; Staud. Cat. Lep. pal. p. 143.

Head and thorax pale purplish, the hairs tipped with grey; tegulæ whitish at base, chocolate-brown at tips; fore tibiæ and tarsi whitish above, mid and hind tibiæ dark brown. Fore wing red-brown with a purplish tinge, paler towards termen; the costal area ochreous white to postmedial line, with the veins on it streaked with white; a black-brown patch below base of cell connected with base by a streak; a rather indistinct double, waved, antemedial line from cell to inner margin; claviform minute, indistinct, greyish; the lower part of cell dark brown, defining the V-shaped yellowish-white orbicular which is open above; reniform fuscous grey, with whitish annulus defined by black at sides; the postmedial line indistinct, double, minutely waved, bent outwards below costa, excurved to vein 4, then incurved; a fuscous patch with pale points on it on costal area before the subterminal line, which is indistinct, pale, angled outwards at vein 7 and excurved at middle, defined on inner side by some pale points; a terminal series of slight dark points. Hind wing white, the veins and terminal area tinged with ochreous; the underside with the costal area irrorated with reddish brown.

Hab. Germany, Zeller Coll.; Austria, Frey Coll.; Switzerland, Leech Coll.; Hungary; Russia, Zeller Coll.; Armenia; Asia Minor, Pontus; Siberia, Zeller Coll., Altai, Zeller Coll.; W. Turkestan, Fergana; Ala Tau, Issyk-kul; E. Turkestan, Ili; Mongolia, Changai Mts.; Amur; Kentei. *Exp.* 38–44 millim.

Larva. Rogenhofer, Verh. z.-b. Ges. Wien, xxv. p. 799 (1875).

Head yellow-brown with dark markings and with some pale hairs; body dark reddish yellow, marbled with dark grey, forming some oblique subdorsal marks; dorsal and lateral lines dark; ventral surface greyish yellow. Food-plants: *Arabis hirsuta* and *Taraxacum officinale*. 4–5.

657. Agrotis exoleta. (Plate LXIX. fig. 28.)

Agrotis exoleta, Leech, Trans. Ent. Soc. 1900, p. 26.

♂. Head and thorax dark chocolate, the palpi at tips and lower part of frons ochreous; pectus and femora with the hair pink; legs brown, the tarsi annulated with ochreous; abdomen ochreous, the ventral surface pink except at extremity. Fore wing olive-yellow; a purple-brown patch at base of costa; claviform represented by a small rufous spot; a purplish-brown patch on middle of costa with rufous edges, its inner edge oblique, its outer edge slightly angled below costa, the patch embracing the small orbicular and reniform stigmata which are defined by rufous, the former oblique, elliptical; the postmedial line represented by a slight striga from costa and sometimes some points on the veins; the subterminal line defined by brown suffusion before and beyond it, slightly angled outwards at vein 7 and excurved at middle; a fine waved brown terminal line. Hind wing yellowish white, the veins and cilia yellow. Underside of fore wing pale fuscous, the marginal areas and costal area of hind wing irrorated with blood-red.

Hab. W. China, Omei-shan, 4 ♂, type. *Exp.* 38 millim.

658. Agrotis glareosa.

Noctua glareosa, Esp. Schmett. iv. p. 387, pl. 128. f. 3 (1789); Steph. Ill. Brit. Ent., Haust. ii. p. 159, pl. 21. f. 1; Herr.-Schäff. Eur. Schmett., Noct. p. 199; Mill. Ic. i. p. 234, pl. 26. ff. 4, 8; Staud. Cat. Lep. pal. p. 141.
Noctua decempunctata, Vill. Linn. Ent. ii. pl. 5. f. 17 (1789).
Noctua I-geminum, Dup. Lép. Fr. vi. p. 80, pl. 77. f. 6 (1826).
Noctua hebræica, Hübn. Eur. Schmett., Noct. f. 642 (1827); Frey, Neu. Beitr. iii. pl. 201. ff. 2, 3.
Agrotis edda, Staud. Iris, iv. p. 266 (1891).
Agrotis limbata, Gouin, Act. Soc. Bordeaux, v. p. 95, pl. iv. f. 5 (1900).

Head and thorax grey, pencilled with pale brown; palpi dark brown at sides except at tips; abdomen grey tinged with ochreous brown. Fore wing grey, tinged with rufous and sparsely irrorated with blackish scales; the subbasal line represented by deep rufous spots below costa and median nervure; the antemedial line pale, excurved towards inner margin, with deep rufous spots on its outer edge below costa and median nervure; orbicular and reniform defined by whitish, the former oblique, somewhat quadrate, open above and below, the cell before and between the stigmata deep rufous, traces of a brownish medial shade from cell to inner margin; the postmedial line whitish, defined by pale rufous on inner side, oblique from costa to vein 7, excurved to vein 4, then oblique; the subterminal line whitish, slightly defined by brown on inner side, very slightly angled outwards at vein 7 and excurved at middle; a terminal series of dark points usually present. Hind wing yellowish white, the veins and terminal area more or less tinged with brown; the underside with the costal area irrorated with brown, a slight discoidal point and traces of a postmedial line towards costa.

Ab. 1. *edda*. Much darker; head, thorax, and abdomen grey-brown; fore wing with the ground-colour red-brown; hind wing brown.—Shetland Is.

Ab. 2. *limbata*. Fore wing suffused with blue-green, the terminal area darker.—France, Gironde.

Hab. Britain, Shetland (*Salvage*), Scotland, Forres (*Salvage*), England, Leech Coll., Ireland, Derry (*Salvage*); France, Sand Coll.; Belgium; Germany; Switzerland; Tirol; N. Spain; Italy; Denmark, Jutland; Sweden. *Exp.* 30–38 millim.

Larva. Meyr. Brit. Lep. p. 104; Barrett, Lep. Brit. iv. p. 32, pl. 141. f. 1.

Light brown, with dark irroration on sides; dorsal and subdorsal lines pale with dark edges; spiracular line pale ochreous; head pale brownish with dark markings. Food-plants: *Cytisus*, *Rumex*, *Stellaria* etc. 9–6.

659. Agrotis docilis.

Agrotis docilis, Grote, Bull. Geol. Surv. vi. p. 259 (1883); Smith, Cat. Noct. N. Am. p. 68.

Agrotis ingeniculata, Smith, Bull. U.S. Nat. Mus. 38, p. 216 (1890); id. Cat. Noct. N. Am. p. 67.

Head and thorax clothed with dark brown, black, and white scales and hair; tegulæ with the basal half whitish, defined by a black medial line; abdomen grey and brown. Fore wing bluish grey, irrorated and in places suffused with brown; a double, waved, brown subbasal line from costa to submedian fold; the antemedial line double, waved, bent inwards at subcostal nervure and angled outwards above inner margin; claviform large, brownish, and

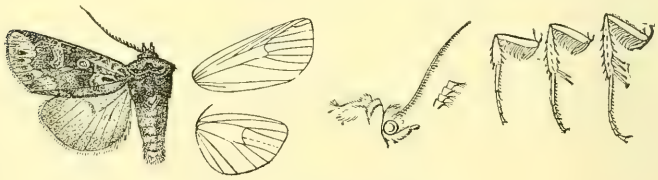


Fig. 72.—*Agrotis docilis*, ♂. ½.

defined by black; orbicular and reniform grey, with some brown scales in centre and defined by black, the former large, oblique, elliptical, touching the antemedial line below costa, the latter large; the postmedial line double, dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line irregularly dentate, defined by brown suffusion and with brown patch at costa, angled outwards at vein 7; a fine waved black terminal line. Hind wing pale, suffused with brown especially towards termen; cilia whitish, with brown line through them; the underside whitish irrorated with brown; a slight discoidal spot and curved postmedial line.

Hab. U.S.A., Colorado (*Snow*, *Bruce*, *Cockerell*), 1 ♂, 3 ♀, type. *Exp.* 40 millim.

660. Agrotis castanea.

Noctua castanea, Esp. Schmett. iv. pl. 187. ff. 8–11 (1795); Staud. Cat. Lep. pal. p. 137.
Noctua lævis, Haw. Lep. Brit. p. 207 (1804).
Noctua neglecta, Hübn. Eur. Schmett., Noct. f, 160 (1827); Dup. Lép. Fr. vi. pl. 78. f. 4; Steph. Ill. Brit. Ent., Haust. ii. p. 154, pl. 21. f. 2.
Noctua cerasina, Frr. Neue Beitr. iv. pl. 312 (1840); Herr.-Schäff. Eur. Schmett., Noct. ff. 131–3.
Noctua xanthe, Woodf. Ent. Mag. xxxvii. p. 116 (1901).

Head and thorax bright red, the hair grey-tipped; palpi black-brown, pale at tips; abdomen fuscous grey, the anal tuft fulvous, the ventral surface reddish. Fore wing chestnut-red; an indistinct blackish subbasal line from costa to submedian fold, incurved at costa; an indistinct waved antemedial line, incurved in cell and angled inwards on vein 1; orbicular and reniform indistinctly defined by brownish, the former small or well developed, rounded, the latter with fuscous mark on its lower part; the postmedial line indistinct, minutely dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line indistinct, greyish, slightly defined by fuscous on inner side, slightly angled outwards at vein 7 and excurved at middle; a terminal series of points often present. Hind wing fuscous brown with an ochreous gloss, the cilia reddish; the underside ochreous, thickly irrorated with brown except towards base of inner area, the costal area tinged with red.

Ab. 1. *neglecta*. Ground-colour pale grey-brown; the stigmata well defined.

Ab. 2. *xanthe*. Ground-colour yellow.

Ab. 3. Hind wing white, the terminal area tinged with fuscous.—Syria.

Hab. Britain, Scotland, England, Leech Coll.; France, Sand Coll.; Germany, Zeller Coll.; Austria; Hungary; Switzerland; Spain, Catalonia; Italy; Russia, Livonia, Leech Coll.; Syria. *Exp.* 36–42 millim.

Larva. Meyr. Brit. Lep. p. 102; Barrett, Lep. Brit. iv. p. 100, pl. 148. f. 2.

Pale green or dull brown with dark irroration; dorsal and subdorsal lines pale; spiracular line broad, whitish; head brown or greenish. Food-plant: *Calluna*. 10–5.

Sect. V. Antennæ of male ciliated.

A. Fore femora and tibiæ of male fringed on outer side with thick masses of hair, pectus with masses of flocculent hair and scales.

661. Agrotis temperata.

Amathes temperata, Schaus, Trans. Am. Ent. Soc. xxi. p. 226 (1894); Druce, Biol. Centr.-Am., Het. ii. p. 485, pl. 94. f. 10.

Head brownish mixed with black; palpi black, pale at tips; tegulæ deep black except at extremities; thorax grey irrorated with brown; fore legs purplish, with the tufts of hair in male blackish;

the hair on pectus pale yellow; abdomen grey, irrorated with fuscous and tinged with fuscous on dorsum, the anal tuft ochreous. Fore wing grey, striated with dark brown and suffused, especially towards costa and subterminal line, with ferruginous brown; traces of a curved subbasal line from costa to submedian fold; the antemedial brown line excurved below costa, then slightly sinuous claviform with its upper edge defined by black; orbicular and reniform whitish, the former open above; the cell before and below the orbicular and between its lower part and reniform deep black;

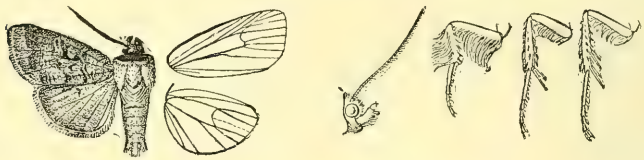


Fig. 73.—*Agrotis temperata*, ♂. ½.

a medial shade from lower angle of cell to inner margin; the postmedial line rather indistinct, highly curved and minutely waved, the area beyond it deep ferruginous to the subterminal line, which is angled outwards at vein 7 and excurved at middle; the terminal area grey, irrorated and striated with dark brown; a terminal series of black points; cilia with dark line through them. Hind wing semihyaline whitish, strongly suffused with brown especially towards costa and termen; the cilia pale with a brown line through them; the underside pale irrorated with brown, and the costal area tinged with brown, a black discoidal point and postmedial line on costal area.

Hab. Mexico, Jalapa (*Trujillo*), 1 ♂; Costa Rica (*Underwood*), Godman-Salvin Coll., 1 ♀; Brazil, Rio Janeiro. *Exp.*, ♂ 36, ♀ 40 millim. Type † in Coll. Schaus.

B. Fore legs and pectus of male normal.

a. Fore wing with the apex produced and acute; claspers of male thickly tufted with hair.

662. Agrotis costalis.

Agrotis costalis, Wlk. x. 343 (1856).

Head and thorax dark red-brown more or less strongly mixed with black; palpi blackish except at tips; tibiæ and tarsi blackish, with pale rings; abdomen pale fuscous, the hair at sides and extremity tinged with rufous. Fore wing deep red-brown, more or less strongly suffused with black, the costal area ochreous, in one specimen rufous to near apex; the subbasal line represented by a black striga from costa; the antemedial line hardly traceable except on costal area, angled at median nervure, oblique towards costa and inner margin; orbicular and reniform small, the former elliptical,

whitish, the latter with blackish centre and whitish annulus; the postmedial line strongly bent outwards below costa, excurved to vein 4, then very oblique; traces of a subterminal line; a terminal

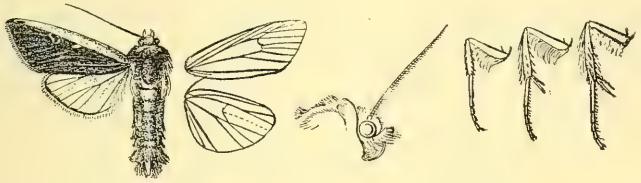


Fig. 74.—*Agrotis costalis*, ♂. ½.

series of black points. Hind wing semihyaline white; the marginal areas tinged with ochreous; the veins and a terminal line brown; the underside with dark discoidal spot.

Hab. Tristan da Cunha (*Capt. Carmichael*), 3 ♂, 1 ♀ type. *Exp.* 40 millim.

b. Fore wing with the apex not produced and acute.
  a^1. Underside of wings clothed with silky androconia in male.
    a^2. Underside of wings clothed with black androconia in male ..... *tibiata*.
    b^2. Underside of wings with the basal two-thirds clothed with golden olive androconia in male ..... *hypochalcis*.

663. Agrotis tibiata.

Agrotis tibiata, Guen. Noct. i. p. 273 (1852).
Orthosia subnigra, Wlk. xi. 747 (1857).

♂. Head and thorax pale grey, sparsely irrorated with fuscous; palpi black, white at tips; abdomen grey-black; pectus, legs, and ventral surface of abdomen deep black, with a few grey hairs, the spurs and tarsi ringed with white. Fore wing pale grey irrorated with black, the terminal area suffused with black; a waved

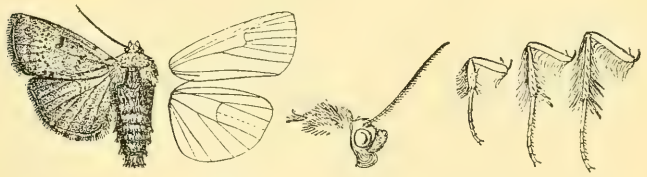


Fig. 75.—*Agrotis tibiata*, ♂. ½.

black subbasal line from costa to submedian fold; an oblique rather indistinct waved antemedial line; orbicular represented by a black point; reniform rufous, defined by black; postmedial line rather indistinct, strongly dentate, slightly bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct,

slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing fuscous black. Underside uniform deep fuscous black.

♀. Fore wing with white spot on reniform; hind wing pale fuscous, the underside white irrorated with black, a black discoidal point and large apical patch.

Hab. Queensland, Brisbane (*Turner*), 2 ♂, 3 ♀; N. S. Wales, Moreton Bay (*Diggles*), 2 ♂, 1 ♀, type *subnigra*; Victoria, Melbourne (*Lower*), 2 ♀. *Exp.* 36–38 millim. Type † in Mus. Paris.

664. Agrotis hypochalcis. (Plate LXIX. fig. 29.)

Agrotis hypochalcis, Turner, Proc. Linn. Soc. N. S. W. 1902, p. 80.

♂. Head and thorax pale red-brown irrorated with black; palpi black, whitish at tips; abdomen grey-brown; pectus, legs, and ventral surface of abdomen fuscous mixed with grey. Fore wing pale reddish brown irrorated with black, the inner and terminal areas suffused with black; an indistinct double, waved, subbasal line from costa to submedian fold; an indistinct oblique double waved antemedial line; orbicular represented by a black point; reniform black defined by white and with some rufous at middle, narrow, expanding below; postmedial line indistinct, highly dentate, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale, defined by black suffusion on inner side, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing fuscous brown. Underside with the basal two-thirds golden-olive with irregular outer edge, the terminal area fuscous.

♀. Purple-brown; fore wing with the reniform more rufous; the underside fuscous with the marginal areas brown; hind wing whitish, thickly irrorated with brown, a discoidal point, curved postmedial line, and apical brown patch.

Hab. Queensland, Brisbane (*Turner*), 1 ♂, 2 ♀; N. S. Wales, Sydney (*Raynor*), 1 ♀. *Exp.* 34–38 millim.

b^1. Underside of wings not clothed with androconia in male.
  a^2. (*Diarsia.*) Palpi with the hair on 2nd joint produced to a point at extremity.
    a^3. Hind wing orange.
      a^4. Hind wing with blackish discoidal lunule.
        a^5. Fore wing with black bar from costa before subterminal line ..... *orbona.*
        b^5. Fore wing without black bar from costa before subterminal line ..... *comes.*
      b^4. Hind wing without blackish discoidal lunule ..... *pronuba.*
    b^3. Hind wing not orange.
      a^4. Tegulæ wholly black ..... *collaris.*
      b^4. Tegulæ pale at base, with prominent black patch at tips.
        a^5. Fore wing with the orbicular **V**-shaped, open above.
          a^6. Fore wing with prominent pale costal fascia from base to postmedial line, with fine streaks on it defining the veins.

a^7. Fore wing with black bar from costa before subterminal line ..... *stentsi.*
b^7. Fore wing with diffused blackish on costa before subterminal line ..... *musivula.*
b^6. Fore wing without prominent pale costal fascia.
a^7. Fore wing with black bar from costa before subterminal line.
a^8. Fore wing more or less strongly tinged with purplish brown ..... *c-nigrum.*
b^8. Fore wing pale grey ..... *degenerata.*
b^7. Fore wing without black bar from costa before subterminal line..... *deraiota.*
b^5. Fore wing with the orbicular elliptical or round.
a^6. Fore wing with whitish costal fascia.
a^7. Fore wing purplish fuscous ..... *stupenda.*
b^7. Fore wing purplish brown..... *misteca.*
c^7. Fore wing pale grey-brown.
a^8. Hind wing wholly suffused with brown..... *flammatra.*
b^8. Hind wing pure white ..... *atritegulata.*
b^6. Fore wing with pale reddish costal fascia ..... *mandarina.*
c^6. Fore wing with the costal area concolorous ..... *vidua.*
c^4. Tegulæ concolorous or with narrow dark terminal band.
a^5. Fore wing with distinct black bar or spots on costal area before subterminal line.
a^6. Fore wing with the costal area reddish or ochreous to the postmedial line.
a^7. Fore wing with the antemedial line angled inwards on vein 1..... *renalis.*
b^7. Fore wing with the antemedial line not angled inwards on vein 1 ..... *consanguinea.*
b^6. Fore wing with the costal area black on medial area ..... *costæstriga.*
c^6. Fore wing with the costal area concolorous.
a^7. Fore wing with the cell filled in with black before and between the stigmata.
a^8. Fore wing with the antemedial line outwardly oblique from below costa to vein 1.
a^9. Head with the vertex black-brown, with pale lateral stripes.
a^{10}. Fore wing with the antemedial line incurved to costa ..... *bicarnea.*
b^{10}. Fore wing with the antemedial line not incurved to costa ..... *treati.*
a^9. Head with the vertex grey or pale brown.
a^{10}. Fore wing with distinct black spots on outer edge of reniform.
a^{11}. Fore wing with the outer edge of orbicular angled outwards ..... *normaniana.*
b^{11}. Fore wing with the outer edge of orbicular not angled outwards ..... *collari.*
b^{10}. Fore wing with the reniform slightly defined by black.
a^{11}. Fore wing with the orbicular **V**-shaped ..... *triangulum.*
b^{11}. Fore wing with the orbicular oblique, elliptical ..... *diatrapesium.*
b^8. Fore wing with the antemedial line inwardly oblique from below costa to vein 1.
a^9. Fore wing with the subbasal line entire ..... *conchis.*
b^9. Fore wing with the subbasal line obsolete on costal area ..... *junctura.*

b^7. Fore wing with the cell not filled in with black.
a^8. Fore wing with the subbasal line excurved below costa ..... *tenuicola.*
b^8. Fore wing with the subbasal line not excurved below costa.
a^9. Fore wing with black spots on subbasal line ... *depuncta.*
b^9. Fore wing without black spots on subbasal line. *baja.*
b^5. Fore wing without black bar or spots before subterminal line.
a^6. Fore wing with the costal area whitish to the postmedial line.
a^7. Fore wing with the median nervure streaked with white ..... *vibora.*
b^7. Fore wing with the median nervure not streaked with white.
a^8. Fore wing with the stigmata small.
a^9. Fore wing with the pale costal fascia not extending beyond postmedial line ..... *plecta.*
b^9. Fore wing with the pale costal fascia extending to near apex ..... *leucogaster.*
b^8. Fore wing with the stigmata large ..... *plectina.*
b^6. Fore wing with the costal area reddish ochreous to the postmedial line ..... *signa.*
c^6. Fore wing with the costal area concolorous.
a^7. Fore wing with black bars from costa at subbasal and antemedial lines ..... *albipennis.*
b^7. Fore wing without black bars from costa at subbasal and antemedial lines.
a^8. Fore wing without black patch below the cell beyond the subbasal line.
a^9. Fore wing without black streak below base of cell.
a^{10}. Fore wing with the antemedial line highly dentate ..... *repleta.*
b^{10}. Fore wing with the antemedial line highly waved.
a^{11}. Fore wing long and narrow ..... *crinigera.*
b^{11}. Fore wing short and broad ..... *compta.*
c^{10}. Fore wing with the antemedial line oblique, slightly waved.
a^{11}. Fore wing with the terminal area dark.
b^{11}. Fore wing with the terminal area concolorous or pale.
a^{12}. Fore wing with the postmedial area darker than the ground-colour.
a^{13}. Fore wing with the antemedial line outwardly defined by black from costa to below cell ..... *rhomboidea.*
b^{13}. Fore wing with the antemedial line not defined by black.
a^{14}. Fore wing with the postmedial line incurved below vein 4.
a^{15}. Fore wing without grey annulus to reniform.
a^{16}. Fore wing suffused with purple-grey... *descripta.*
b^{16}. Fore wing suffused with rufous ..... *punicea.*
b^{15}. Fore wing with grey annulus to reniform ..... *brunnea.*
b^{14}. Fore wing with the postmedial line not incurved below vein 4 ..... *exusta.*
b^{12}. Fore wing with the postmedial area not darker than ground-colour.

a^{13}. Fore wing with the orbicular round or elliptical.
a^{14}. Fore wing with black and yellow bar in cell beyond the subbasal line ..... *bolteri.*
b^{14}. Fore wing without black and yellow bar in cell.
a^{15}. Fore wing with oblique ochreous striga in cell beyond antemedial line ..... *neurogramma.*
b^{15}. Fore wing without ochreous striga in cell.
a^{16}. Fore wing with medial shade.
a^{17}. Fore wing with dark streaks on the veins.
a^{18}. Fore wing with the postmedial line single ..... *sexstriata.*
b^{18}. Fore wing with the postmedial line double..... *rosaria.*
b^{17}. Fore wing without dark streaks on the veins.
a^{18}. Fore wing with the termen slightly angled at vein 3.
a^{19}. Fore wing with the apex distinctly produced, the lower part of cell suffused with black ..... *obuncula.*
b^{19}. Fore wing with the apex not produced, the cell not suffused with black..... *calgary.*
b^{18}. Fore wing with the termen not angled at vein 3.
a^{19}. Fore wing with the inner area concolorous.
a^{20}. Hind wing whitish towards base.
a^{21}. Head with the vertex whitish or pale brown.
a^{22}. Fore wing with the claviform brown defined by blackish ... *plebeia.*
b^{22}. Fore wing with the claviform slightly defined by ochreous and brown ..... *mandarinella.*
c^{22}. Fore wing with the claviform represented by a black point.
a^{23}. Fore wing not tinged with purple ..... *jucunda.*
b^{23}. Fore wing tinged with purple. *rubi.*
d^{22}. Fore wing with the claviform absent ..... *xanthographa.*
b^{21}. Head with the vertex rufous or purple-brown ..... *rubifera.*
b^{20}. Hind wing uniform fuscous brown.
a^{21}. Fore wing without olive-yellow shade from costa beyond middle.
a^{22}. Head and tegulæ bright chocolate, contrasting..... *phyllophora.*
b^{22}. Head and tegulæ concolorous.
a^{23}. Fore wing with the ground-colour grey.
a^{24}. Fore wing with the cell black between the stigmata ..... *nivisparsa.*
b^{24}. Fore wing with the cell not black between the stigmata... *nebula.*
b^{23}. Fore wing yellow-brown, without rufous or purple tinge ... *flavibrunnea.*

c^{23}. Fore wing suffused with rufous or purplish.
a^{24}. Fore wing short and broad.
a^{25}. Fore wing with the cell between the stigmata not black ..... *dahli.*
b^{25}. Fore wing with the cell between the stigmata black. *tarda.*
b^{24}. Fore wing long and narrow.
a^{25}. Fore wing with the terminal area pale ..... *cinctipennis.*
b^{25}. Fore wing with the terminal area concolorous.
a^{26}. Fore wing with distinct white spot on outer edge of reniform..... *selenias.*
b^{26}. Fore wing without white spot on outer edge of reniform.
a^{27}. Thorax with the dorsal crests not tipped with grey ..... *chersotoides.*
b^{27}. Thorax with the dorsal crests tipped with grey ... *coniotis.*
b^{21}. Fore wing with olive-yellow shade on costal area from middle to subterminal line including the reniform .... *rubicilia.*
b^{19}. Fore wing with the inner area suffused with blackish..... *basistriga.*
c^{19}. Fore wing with the inner area suffused with grey ..... *glottuloides.*
b^{16}. Fore wing without medial shade.
a^{17}. Fore wing with the veins not streaked with grey.
a^{18}. Fore wing not suffused with purple.
a^{19}. Fore wing with brown centre and grey annulus to reniform ..... *cynica.*
b^{19}. Fore wing with the reniform ochreous whitish ..... *flavirena.*
b^{18}. Fore wing suffused with purple.
a^{19}. Fore wing with white annuli to stigmata ..... *tincta.*
b^{19}. Fore wing without white annuli to stigmata ..... *cerastioides.*
b^{17}. Fore wing with the veins streaked with grey ..... *griseivena.*
b^{13}. Fore wing with the orbicular oblique, oblong ..... *esurialis.*
c^{13}. Fore wing with the orbicular V-shaped, open above ..... *trigonica.*
d^{10}. Fore wing with the antemedial line erect, slightly waved ..... *cugramma.*
e^{10}. Fore wing with the antemedial line excurved from costa to median nervure, then incurved.
a^{11}. Fore wing broad, purplish grey suffused in parts with rufous..... *cervina.*
b^{11}. Fore wing narrow, purplish fuscous suffused in parts with black ..... *fennica.*
f^{10}. Fore wing with the antemedial line obliquely excurved ..... *relata.*

b^9. Fore wing with black streak below base of cell.
a^{10}. Fore wing with rufous annuli to the stigmata. *oblata.*
b^{10}. Fore wing with pale annuli to the stigmata.
a^{11}. Fore wing with the claviform elongate, narrow ..... *flavotincta.*
b^{11}. Fore wing with the claviform minute ..... *collina.*
b^8. Fore wing with black patch below the cell beyond subbasal line.
a^9. Fore wing with the antemedial line oblique, sinuous.
a^{10}. Fore wing with the cell black between the stigmata.
a^{11}. Fore wing with the orbicular large, open above.
a^{12}. Fore wing with the lines distinctly defined by grey ..... *melancholica.*
b^{12}. Fore wing with the lines indistinct ..... *sareptana.*
b^{11}. Fore wing with the orbicular small, open above..... *trisignata.*
c^{11}. Fore wing with the orbicular small, entire... *bonsa.*
b^{10}. Fore wing with the cell not black between the stigmata ..... *poliogramma.*
b^9. Fore wing with the antemedial line angled outwards below costa, then oblique.
a^{10}. Fore wing with the black patch below the cell not comma-shaped.
a^{11}. Fore wing with the orbicular open above.
a^{12}. Fore wing with ochreous or grey annulus to orbicular.
a^{13}. Fore wing with veins 2, 3, 4 defined by ochreous to the subterminal line ..... *albifurca.*
b^{13}. Fore wing with veins 2, 3, 4 defined by grey to the subterminal line ..... *agalma.*
b^{12}. Fore wing with the orbicular fuscous, veins 2, 3, 4 not defined by ochreous or grey ... *substrigata.*
b^{11}. Fore wing with the orbicular small, round, entire..... *cœlebs.*
b^{10}. Fore wing with the black patch below the cell comma-shaped .... *limeria.*

665. Agrotis orbona.

Phalæna orbona, Hüfn. Berl. Mag. iii. p. 304 (1767); Staud. Cat. Lep. pal. p. 137.
Noctua subsequa, Schiff. Wien. Verz. p. 79 (1776); Hübn. Eur. Schmett., Noct. f. 106; Steph. Ill. Brit. Ent., Haust. ii. p. 103; Herr.-Schäff. Eur. Schmett. ii. p. 329.
Noctua consequa, Hübn. Eur. Schmett., Noct. f. 105 (1827).
Agrotis sarmata, Ramb. Ann. Soc. Ent. Fr. 1871, p. 315.

Head and thorax pale rufous to grey, tinged with rufous; abdomen pale brown, the anal tuft and ventral surface tinged with rufous. Fore wing pale rufous to grey, tinged with olive or dark brown or irrorated with black; an indistinct, double, curved subbasal line from costa to submedian fold, with more prominent striga at costa, a similar antemedial line extending to inner margin; orbicular and reniform with pale outlines, the former round or oblique and open above; the postmedial line indistinct, double, waved, with more prominent striæ at costa, oblique to vein 4 and slightly incurved at discal fold, incurved below vein 4;

the subterminal line indistinct, double, grey, slightly defined by dark suffusion on inner side and by a prominent double dentate black mark below costa, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing orange; some brownish suffusion at base; a black discoidal lunule; a subterminal black band with waved edges, broad towards costa, narrowing towards tornus; the underside with the costal area red suffused with white.

Ab. 1. *consequa*. Fore wing darker.

Hab. Britain, Scotland, Forres (*Salvage*), England, Leech Coll.; France, Sand Coll.; Denmark (*Dohlmann*); Germany, Zeller and Frey Colls.; Austria, Leech Coll.; Spain; Corsica; Scandinavia; Russia, Livonia, Zeller Coll.; Armenia; Asia Minor; Syria, Leech Coll.; W. Turkestan, Kurdistan; Turcomania; Kashmir, Dana (*McArthur*), 1 ♀; Punjab, Sultanpur (*G. Young*), 1 ♂, 2 ♀. *Exp.* 40–46 millim.

Larva. Meyr. Brit. Lep p. 101; Barrett, Lep. Brit. iv. p. 20, pl. 138. f. 3.

Greyish ochreous or fuscous; dorsal line broad, ochreous-yellow, with fine black edges; a subdorsal series of dark fuscous oblong marks, with a yellowish-grey line below them; lateral line pale; subspiracular line broad, pale ochreous with dark edges; head pale fuscous with dark markings. Food-plants: grasses, *Ranunculus*, *Primula*, etc. 9–4.

666. Agrotis comes.

Noctua orbona, Fabr. Mant. Ins. ii. p. 150 (1787), nec Hüfn.; Don. Nat. Hist. Brit. Ins. x. p. 46, pl 343. f. 2; Godt. Lép. Fr. v. pl. 59. ff. 2–5; Steph. Ill. Brit. Ent., Haust. ii. p. 102; Herr.-Schäff. Eur. Schmett., Noct. f. 328; Staud. Cat. Lep. pal. p. 137.

Noctua subsequa, Esp. Schmett. iv. pl. 104. ff. 1–3 (1786), nec Schiff.

Noctua pronuba minor, Vill. Ent. Linn. ii. p. 279 (1789).

Noctua comes, Treit. Schmett. Eur. v. i. p. 254 (1825); Hübn. Eur. Schmett., Noct. f. 521 (1827).

Noctua adsequa, Treit. Schmett. Eur. v. 1, p. 256 (1825).

Noctua prosequa, Treit. Schmett. Eur. v. 1, p. 256 (1825).

Noctua bergensis, Sp. Schn. Bergen. Mus. Aarbog, 1901, p. 155, pl. —. f. 2.

Head and thorax rufous to grey with a reddish tinge; abdomen ochreous, the lateral and anal tufts and ventral surface tinged with red. Fore wing rufous irrorated with black, to grey irrorated with rufous; the subbasal line represented by striæ from costa; the antemedial line indistinct, double, waved, or obsolete and represented by double striæ from costa and points on the veins; orbicular and reniform with pale outlines, the former oblique, open above, the latter with some fuscous in its lower part; the postmedial line indistinct, double, with dark points on the veins at its outer side, oblique towards costa, slightly incurved in discal fold, incurved below vein 4; the subterminal line indistinct, greyish, defined by slight dark suffusion on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of dark points. Hind wing orange; the costal area tinged with fuscous; a dark discoidal lunule; a fuscous subterminal band with waved edges, wide towards costa,

narrow towards tornus; the underside with the costal area suffused with red.

Ab. 1. *adsequa*. Paler and more uniform in colour.

Ab. 2. *prosequa*. Fore wing with the markings more prominent.

Ab. 3. *curtisi*. Smaller; fore wing suffused with black or red, the markings distinct; hind wing often more or less suffused with fuscous.—Shetland Is.

Ab. 4. *bergensis*. Fore wing partly suffused with fuscous.—Norway.

Hab. Britain, Shetland Is., Hebrides, Leech Coll., Forres (*Salvage*), England, Scotland, Wales, Ireland (*Salvage*); France, Leech Coll.; Germany, Zeller Coll.; Switzerland, Leech Coll.; N. Spain; Algiers; Canaries; Scandinavia; Russia, Livonia; Armenia; Asia Minor; Syria, Leech Coll. *Exp.* 38–50 millim.

Larva. Meyr. Brit. Lep. p. 101; Barrett, Lep. Brit. iv. p. 17, pl. 139.

Pale greyish ochreous to brown; dorsal line faint; subdorsal line brown, with longitudinal marks on somites 10, 11, pale-edged below, tending to be connected by a bar on somite 11; a spiracular series of dark brown oblique marks; spiracular line pale, sometimes tinged with pink; head light brown, with darker markings. Food-plants: *Stellaria*, *Salix*, *Rubus*, *Rumex*, etc. 9–5.

667. Agrotis pronuba.

Noctua pronuba, Linn. Syst. Nat. x. p. 512 (1758); Esp. Schmett. iv. pl. 102. f. 1; Hübn. Eur. Schmett., Noct. f. 103; Godt Lép. Fr. v. pl. 58; Hmpsn. Moths Ind. ii. p. 190; Staud. Cat. Lep. pal. p. 137.

Noctua innuba, Treit. Schmett. Eur. v. 1, p. 265 (1823); Steph. Ill. Brit. Ent., Haust. ii. p. 104.

Agrotis hoegii, Herr.-Schäff. Neue Schmett. ff. 117, 118 (1856).

Head and tegulæ white mixed with dark brown, tegulæ with brown medial line and dark tips; palpi dark with white tips; thorax dark brown; tibial spurs and tarsi with pale rings; abdomen brownish ochreous, the ventral surface irrorated with grey. Fore wing pale reddish brown to dark brown, irrorated and suffused in parts with grey and with dark striæ; a double curved subbasal line from costa to submedian fold; a more or less indistinct double waved antemedial line; orbicular and reniform with pale annuli, the former rather oblique, elliptical, often filled in with grey, the latter with its centre or lower part fuscous; the postmedial line indistinct, dentate, bent outwards below costa, slightly incurved at discal fold, incurved below vein 4; the subterminal line pale, with two black spots before it below costa, angled outwards at vein 7 and excurved at middle; some dark points on termen. Hind wing orange; the costal area tinged with fuscous; a nearly terminal black band with waved edges, broad at costa, narrowing and not reaching tornus; the underside with the costal area pinkish grey irrorated with black, and with a rufous postmedial line on it.

Ab. 1. Paler and with the thorax concolorous.

Ab. 2. *hoegi*. Smaller; hind wing with small discal black spot.

Hab. Britain, England, Leech Coll., N. Wales (*Salvage*); France, Sand Coll.; Denmark (*Dohlmann*); Germany, Zeller & Frey Colls.; Switzerland; Spain; Italy; Scandinavia; Russia, Livonia, Zeller Coll.; Greece (*Merlin*); W. & C. Asia; Egypt, Cairo (*Flower*); Punjab, Dharmsála (*Hocking*), 1 ♀. *Exp.* 52–60 millim.

Larva. Meyr. Brit. Lep. p. 100; Barrett, Lep. Brit. iv. p. 26, pl. 140.

Pale green to dull brown; dorsal line pale; a subdorsal series of blackish longitudinal marks on somites 4–11, with a pale line below them; subspiracular line pale; head pale brown with dark markings. Food-plants: *Brassica*, *Taraxacum*, *Rumex*, etc. 9–5.

668. Agrotis collaris. (Plate LXIX. fig. 30.)

Agrotis collaris, Grote & Rob. Trans. Am. Ent. Soc. i. p. 348, pl. 7. f. 53 (1868); Smith, Cat. Noct. N. Am. p. 74.

Palpi brown, their extremity and frons whitish; vertex of head and tegulæ black; thorax purple-grey, the scales tipped with pale grey; pectus, legs, and abdomen fuscous irrorated with grey. Fore wing dark purple-grey irrorated with brown; a subbasal grey line from costa to submedian fold; a grey antemedial line defined by brown on outer side and slightly bent inwards to costa; claviform small, more or less completely outlined in black; orbicular and reniform purplish grey with pale grey annuli, the former oblique **V**-shaped, open above, the latter constricted at middle; quadrate black spots in the cell before and between the stigmata; a medial shade from lower angle of cell to inner margin; the postmedial line grey, defined by brown on inner side, curved from costa to vein 4, then oblique; an inwardly diffused dark subterminal line angled outwards at vein 7 and excurved at middle; an indistinct series of terminal points. Hind wing fuscous brown; the cilia whitish at tips; the underside with discoidal lunule and traces of curved postmedial line.

Hab. Canada; U.S.A., New York, 2 ♂, 1 ♀, New Hampshire, Massachusetts, Colorado (*Cockerell*), 2 ♂. *Exp.* 36 millim.

669. Agrotis stentsi. (Plate LXIX. fig. 31.)

Agrotis stentzi, Led. Verh. zool.-bot. Ges. Wien, 1853, p. 367, pl. 4. f. 4; Staud. Cat. Lep. pal. p. 142.

Ochropleura triangularis, Moore, P. Z. S. 1867, p. 55; Hmpsn. Moths Ind. ii. p. 189.

Head and thorax pale purple-brown; vertex of head and basal half of tegulæ ochreous white, the terminal half of tegulæ with semicircular black patch; fore tibiæ and tarsi ochreous white above; abdomen greyish brown. Fore wing purple-brown to nearly black; the costal area ochreous white, with slight dark streaks on it to the postmedial line, extending to just below cell at base; a black streak in base of submedian fold expanding into a triangular subbasal patch; a pale sinuous antemedial line from costal area to inner margin, with a blackish point on its outer edge representing the claviform; orbicular ochreous or ochreous-white, triangular, confluent with costal area, defined by black and emitting a streak below the

costal fascia to the subbasal black patch; reniform with fuscous centre with ochreous lunule on it and ochreous annulus defined on inner side by black; the postmedial line minutely dentate, often defined by ochreous on outer side, slightly bent outwards below costa, excurved at median nervules, then oblique; the subterminal line pale, defined on inner side by an oblique black bar at costa, then by some points, angled outwards at vein 7 and somewhat dentate at veins 4, 3. Hind wing fuscous brown.

Ab. 1. Fore wing more variegated and irrorated with grey; claviform well developed, defined by black, orbicular with grey centre; a waved medial line from cell to inner margin.—Kashmir, Punjab.

Hab. Siberia, 1 ♀; W. Turkestan, Ferghana; E. Turkestan, Ili; Tibet, Amdo; Amurland, Ussuri; Japan, Yokohama (*Pryer*, *Manley*), 1 ♂, 2 ♀, Chiuzengi (*Lewis*), 1 ♀; Kashmir, Rala (*McArthur*), 2 ♂, 2 ♀, Kokser (*McArthur*), 2 ♂, Narkundah (*McArthur*), 2 ♀; Kulu, Sultanpur (*G. Young*), 1 ♀; Punjab, Simla, 1 ♂, Dalhousie, 1 ♂, Murree (*Yerbury*), 1 ♂, Dharmsála (*Hocking*), 4 ♂, 2 ♀; Tibet, Yatong (*Hobson*), 4 ♂; Sikhim (*Russell*, *Lidderdale*), 3 ♂, 1 ♀, type *triangularis*. *Exp.* 36–48 millim.

670. Agrotis musivula. (Plate LXIX. fig. 32.)

Agrotis musivula, Staud. Iris, viii. p. 310 (1895); id. Cat. Lep. pal. p. 143.

♂. Head and thorax red-brown with a purplish tinge; tegulæ pale rufous at base, with white medial line and black-brown tips; abdomen grey-brown, the ventral surface blackish, the anal tuft rufous. Fore wing purplish brown, the disk bright red-brown; the costal area brownish ochreous with red-brown streaks to the postmedial line, extending to just below cell at base; an olive-brown subbasal patch below the cell; the antemedial line obsolete towards costa, excurved below the cell and above inner margin, angled inwards on vein 1; orbicular and reniform with fuscous centres and grey annuli defined by black, the former V-shaped, open above, the cell before and between them tinged with dark olive-brown; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line indistinct, pale, defined on inner side by diffused blackish at costa, then by a series of small dentate dark marks slightly angled outwards at vein 7 and excurved at middle; a terminal series of dark points. Hind wing fuscous brown, with darker terminal line and ochreous line at base of cilia; the underside paler, the costal area irrorated with fuscous.

Hab. Tibet, Kuku-noor, 1 ♂, Amdo. *Exp.* 34 millim.

671. Agrotis c-nigrum.

Noctua c-nigrum, Linn. Syst. Nat. x. p. 516 (1758); Hübn. Eur. Schmett., Noct. pl. 24. f. 111; Hmpsn. Moths Ind. ii. p. 188; Staud. Cat. Lep. pal. p. 139; Smith, Cat. Noct. N. Am. p. 72.

Bombyx nun-atrum, Esp. Schmett. Eur. iii. text p. 385 (1777).

Noctua gothica, var. *singularis*, Esp. Schmett. iii. pl. 76. f. 3 (1777).

Head and thorax pale to deep purple-brown, often mixed with white; palpi black except at extremity; tegulæ except at tips white tinged with olive; tibiæ and tarsi blackish, ringed with white; abdomen grey tinged with brown, the anal tuft fulvous. Fore wing pale grey, tinged with purplish brown to deep purple-grey; the subbasal line double, blackish, curved from costa to vein 1 but interrupted at cell, and with some brown or black suffusion beyond it in submedian fold; the antemedial line double, oblique, waved and excurved above inner margin; claviform with its extremity defined by a **V**-shaped black mark; orbicular brownish white, defined by black in

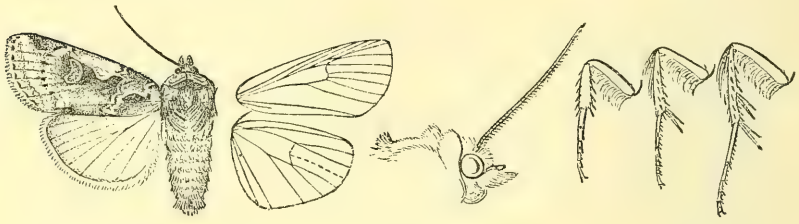


Fig. 76.—*Agrotis c-nigrum*, ♂. ½.

the form of a very open **V** confluent with the brownish-white medial costal area; reniform rufous above, purplish fuscous below, its centre defined by brown and its outline by black; a waved medial shade from lower angle of cell to inner margin; the postmedial line double, bent outwards below costa, excurved to vein 4, then incurved, dentate, and with series of black points at the veins; a pale sinuous subterminal line with oblique black striga on costa, and the area beyond it rather darker; a terminal series of black points. Hind wing ochreous white, tinged with brown especially on the veins, costal, and terminal areas; the underside with discoidal point and indistinct sinuous postmedial line.

Hab. Canada, Renfrew Co., 2 ♂, Nova Scotia (*Redman*), 1 ♂; U.S.A., New York, 1 ♂, 4 ♀, Schenectady (*Lintner*), 2 ♀, Evans Centre (*Grote*), 1 ♀, Illinois (*Doubleday*), 1 ♂, Kansas (*Snow*), 2 ♀; Mexico, Jalapa (*Hoege*), 1 ♂, 1 ♀, Godman-Salvin Coll.; C. & S. Europe, Germany, Zeller & Frey Colls.; Norway, Romsdal, 1 ♂; Russia, Livonia, 1 ♀; C. & N. Asia; Siberia, Schigansk, 1 ♀; Japan, Hakodate, 1 ♂, Oiwake (*Pryer*), 1 ♀; Corea, Gensan, 1 ♂; W. China, Chia-kou-ho, 1 ♂, 1 ♀, Washan, 1 ♂, Ta-chien-lou, 1 ♀, Chang-yang, 1 ♀; N.W. Himalayas, Kulu, Sultanpur (*Graham Young*), 2 ♂, 1 ♀, Campbellpur (*Yerbury*), 1 ♀, Dharmsála (*Hocking*), 3 ♂, 5 ♀; Sikhim (*Lidderdale, Dudgeon*), 1 ♂, 1 ♀; Nilgiris (*Hampson*), 2 ♂, 2 ♀. *Exp.* 36–48 millim.

Larva. Meyr. Brit. Lep. p. 99; Barrett, Lep. Brit. iv. p. 53, pl. 142. f. 3.

(Redescribed.) Head 3·5 mm., light brown, shining, reticulate with dark brown, the curved vertical bands very broad, with strong mottling between at vertex; line upward from eye strong, with a line

behind it. Body brown, finely mottled on a cream-coloured ground; cervical shield a shade darker, not shining, unlined. Dorsal line whitish, nearly obsolete; subdorsal brown; oblique shades forming subdorsal dashes on joints 5 to 9, then becoming cuneiform patches, the pair on joint 12 largest and joined behind by a fine transverse line; faint oblique lateral shades in reversed direction. Substigmatal band broad, faint, pinkish, obsolete in the incisures, not very strongly edged, but not shading into the subventral area which is dark. Spiracles white, in blackish areas. A general feeder.—H. G. D.

672. Agrotis degenerata. (Plate LXX. fig. 1.)

Agrotis degenerata, Staud. Stett. ent. Zeit. 1889, p. 26; id. Cat. Lep. pal. p. 139.

♂. Head and thorax grey mixed with brown; tegulæ whitish with brown tips; palpi except at tips, pectus and legs grey-brown; abdomen ochreous white, the anal tuft tinged with rufous, the ventral surface with brown. Fore wing brownish grey, with slight dark irroration; the subbasal line represented by a dark striga from median nervure, defined by grey on outer side, beyond which is a diffused brown patch with a black striga above it in cell; the antemedial line indistinct, oblique, slightly sinuous; orbicular brownish white, V-shaped, open above; reniform brownish white, ill-defined, its centre defined by brown, the cell before and between the stigmata olive-brown; the postmedial line represented by slight points on the veins, bent outwards below costa, excurved to vein 4, then oblique; some pale points on costa towards apex; the subterminal line indistinct, pale, defined on inner side by a brown bar from costa, then by small spots, angled outwards at vein 7 and excurved at middle, the area beyond it rather darker; some dark points on termen. Hind wing ochreous white, the apical area and apical half of termen tinged with fuscous; the underside with the costal area irrorated with brown.

Hab. W. Turkestan, Issyk-kul, 1 ♂; E. Turkestan, Kashgar. *Exp.* 38 millim.

673. Agrotis deraiota. (Plate LXX. fig. 2.)

Amathes c-nigrum, Hmpsn. Ill. Het. ix. p. 94, pl. 176. f. 4 (1893), nec Linn.
Agrotis deraiota, Hmpsn. J. Bomb. N. H. Soc. 1902, p. 198, pl. B. f. 7.

♂. Palpi and frons brown and grey, the latter with black bar; vertex of head and tegulæ rufous, the extremity of latter and thorax dark brown mixed with grey; abdomen grey-brown, rufous at extremity and on ventral surface. Fore wing pale red-brown suffused with purplish grey; the subbasal line double, waved from costa to vein 1 and followed by some black scales in submedian fold; the antemedial line double, waved, oblique and bent outwards to inner margin; claviform obsolete; orbicular and reniform purplish grey, their centres defined by brown, the former in the shape of a very open V confluent with the purplish-grey costal area, the area

in and below cell before and between them dark red-brown ; a waved medial shade from lower angle of cell to inner margin ; the post-medial line indistinct, double, dentate, with a series of black points on the veins, bent outwards below costa, excurved to vein 4, then incurved ; a sinuous subterminal line with the area beyond it purplish fuscous. Hind wing yellow-brown ; the underside whitish, with the costal area brown ; a discoidal spot and sinuous postmedial line.

♀. Thorax and fore wing dark purple-grey ; hind wing dark brown.

Hab. Ceylon, Pundaloya (*Green*), 1 ♂, Maturatta (*Mackwood*), 1 ♀ type. *Exp.*, ♂ 40, ♀ 48 millim.

Larva. Dorsal area pink ; a broad deep-black subdorsal stripe ; pale yellow lateral stripes of the same width ; sublateral series of black spots ; narrow brownish-red stripes below the spiracles ; ventral area irrorated with black ; head and legs pink. Food-plants : *Menispermum*, *Viola*, etc.

674. Agrotis stupenda.

Ochropleura stupenda, Butl. A. M. N. H. (5) i. p. 166 (1878) ; id. Ill. Het. B. M. ii. p. 29, pl. 30. f. 3 ; Staud. Cat. Lep. pal. p. 142.
Noctua stupens, Oberth. Et. Ent. v. p. 75, pl. 7. f. 7 (1880).

Head black mixed with grey ; palpi ochreous at tips ; tegulæ ochreous tinged with rufous, black at tips ; thorax black suffused with purple ; fore tibiæ and tarsi brown above, mid and hind tibiæ ringed with ochreous ; abdomen ochreous, dorsally suffused with fuscous, ventrally black. Fore wing black, suffused with leaden purple and irrorated with black, the medial area sometimes rufous towards inner margin, the costal area ochreous to postmedial line ; a subbasal ochreous point in submedian fold with black patch beyond it ; the antemedial line double, filled in with ochreous, obsolete on costal area, incurved from cell to above inner margin, where it is angled outwards ; the claviform slightly defined by black and with a black patch beyond its extremity ; orbicular and reniform defined by the cell before and between them being black, the former rounded or elliptical, the latter with some ochreous or rufous on its upper part and with more or less developed black streaks between it and the postmedial line, which is formed by a series of small black lunules with ochreous marks on their outer side, bent outwards below costa, excurved to vein 4, then incurved and angled outwards again on vein 1, a series of black points beyond it on the veins ; the subterminal line represented by a series of more or less developed ochreous lunules or points with dentate black marks on their inner edge and patch at costa, angled outwards at vein 7 and excurved at middle ; a terminal series of black lunules. Hind wing ochreous, the terminal third suffused with black ; the underside with curved postmedial line and black suffusion on costal and terminal areas.

Hab. Amurland, 1 ♂, Askold I. ; Japan (*Jonas*, *Pryer*, *Manley*), 1 ♂, 3 ♀, type, Oiwake (*Pryer*), 2 ♀, Kiushiu, 1 ♂ ; Corea, Gensan (*Ito*), 1 ♂. *Exp.* 52–60 millim.

*675. Agrotis mysteca. (Plate LXX. fig. 3.)

Carneades mixteca, Schaus, Tr. Am. Ent. Soc. xxi. p. 226 (1894).

♀. Head rufous slightly mixed with white; tegulæ ochreous at base, shading to white before the large semicircular black terminal patch; thorax purple-brown mixed with white; abdomen red-brown, the ventral surface irrorated with ochreous. Fore wing purple-brown; the costal area yellowish white to the postmedial line; a black patch below base of cell; a double antemedial line from cell to inner margin, incurved to vein 1, then excurved; claviform with its upper edges defined by black; orbicular and reniform purple-brown, with a few white scales forming the annuli, the cell before, between, and above them black, the orbicular round, the reniform with its outer edge defined by black scales; a double waved postmedial line, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line represented by diffused patches of grey scales mixed with a few black ones on its inner edge, more prominently black towards costa. Hind wing white, suffused with reddish brown towards margins, the veins brownish, the cilia yellowish with a brown line through them; the underside with small discoidal spot and curved postmedial series of striæ on the veins.

Hab. Mexico, Jalapa, type † ♀ in Coll. Schaus. *Exp.* 40 millim.

676. Agrotis flammatra.

Noctua flammatra, Schiff. Wien. Verz. p. 80 (1776); Hübn. Eur. Schmett., Noct. f. 124; Godt. Lép. Fr. ii. p. 169, pl. 60. f. 4; Hmpsn. Moths Ind. ii. p. 189; Staud. Cat. Lep. pal. p. 143.
Agrotis deleta, Koll. Ins. Pers. p. 53 (1848).
Agrotis basiclavis, Wlk. x. p. 346 (1856).
Agrotis bimaculata, Mill. Cat. rais. pt. 2, Suppl. p. 15 (1875).

Head and thorax grey-brown tinged with purplish red; palpi dark brown at sides except at tips; tegulæ with semicircular black-brown patch; tarsi with pale rings to the joints; abdomen pale grey-brown. Fore wing grey-brown tinged with purplish red; the costal area usually pale to middle or postmedial line; the subbasal line represented by slight double striæ from costa; a black streak in base of submedian fold, expanding beyond the subbasal line; the antemedial line double, waved, almost obsolete on costal area; claviform with its extremity slightly defined by black; orbicular and reniform brownish grey, the former rounded, open above, defined by black below, the latter defined by black on inner side, or with the cell black before the orbicular and sometimes also between the stigmata; the postmedial line minutely dentate, slightly defined by ochreous on outer side, bent outwards below costa, excurved to vein 4, then incurved and slightly angled outwards on vein 1; the subterminal line greyish, often defined by slight dentate black marks on inner side, angled outwards at vein 7 and slightly dentate at veins 4 and 3; traces of a terminal series of black points and a fine ochreous line at base of cilia. Hind wing ochreous whitish

suffused with pale brown; the cilia white, with a brown line at base; the underside whitish, the costal area irrorated with brown, a slight discoidal lunule and sinuous postmedial line.

Hab. Britain, Leech Coll.; France; Germany; Austria, Zeller & Frey Colls.; Switzerland, Frey Coll.; Spain; Corsica; Italy; Syria, Lebanon (*Mrs. Nicholl*); Persia; W. Siberia, Altai, 1 ♀, Leech Coll.; Kashmir, Narkundah (*McArthur*), 2 ♂; Punjab, Sultanpur (*G. Young*), 1 ♂, Rawal Pindi (*Yerbury*), 2 ♂, Dharmsála (*Hocking*), 4 ♂, 3 ♀, Mynpuri, 1 ♂, Allahabad, 1 ♂; Tibet, Yatung (*Hobson*), 2 ♀; Sikhim (*Lidderdale*), 1 ♂, 1 ♀. *Exp.* 40–60 millim.

Larva. Meyr. Brit. Lep. p. 99; Barrett, Lep. Brit. iv. p. 50, pl. 142. f. 4.

Uniform green, with pale spiracular stripes. Food-plants: *Taraxacum*, *Fragaria*. 9–5.

677. Agrotis atritegulata. (Plate LXX. fig. 4.)

Agrotis atritegulata, Hmpsn. Ann. S. Afr. Mus. ii. p. 261 (1902).

♂. Head ochreous white; palpi blackish except at tips; thorax ochreous white tinged with rufous, the tegulæ with large black patch and without rufous tinge; legs tinged with brown; abdomen ochreous white slightly irrorated with fuscous. Fore wing purplish grey, the costal area ochreous white irrorated with fuscous, the costal edge ochreous; some whitish at base of inner margin; a deep black fascia in and below cell to the orbicular and thence in the cell to reniform, which is defined on outer side by black. Hind wing pure semihyaline white; the underside with the costal area tinged with ochreous and with some dark postmedial points on the veins.

Hab. Transvaal (*Ross*), 1 ♂ type. *Exp.* 38 millim.

678. Agrotis mandarina. (Plate LXX. fig. 5.)

Ochropleura mandarina, Leech, Trans. Ent. Soc. 1900, p. 36.

♀. Head black mixed with brown and grey; tegulæ pale rufous, their tips and the patagia deep rufous; thorax grey; pectus, legs, and abdomen dark brown. Fore wing reddish brown, irrorated with dark brown and suffused with purple-grey; the costal area ochreous with a rufous tinge to the postmedial line; a black patch below base of cell crossed by the double, curved, subbasal line; a double obliquely sinuous antemedial line; claviform with its extremity slightly defined by brown; orbicular and reniform reddish ochreous, their centres defined by brown, the former small, round, the latter with its outer part suffused with dark brown, the cell before and between the stigmata deep black; the postmedial line double, brown, minutely waved, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line somewhat dentate, rufous, angled outwards at vein 7 and excurved at middle; a waved dark terminal line. Hind wing yellowish brown; the underside with the costal area irrorated with grey.

Hab. W. China, Chia-kou-ho (*Pratt*), 1 ♀ type. *Exp.* 48 millim.

679. Agrotis vidua.

Agrotis vidua, Staud. Rom. Mém. vi. p. 409, pl. 7. f. 3 (1892); id. Cat. Lep. pal. p. 139.

Head and tegulæ ochreous; palpi except at tips, and tips of tegulæ black; thorax purple-brown; tibiæ and tarsi above ochreous; abdomen fuscous, the anal tuft ochreous brown. Fore wing brown suffused with purple; a slight black streak in base of submedian fold; a double, waved, subbasal line from costa to submedian fold; a double, waved, antemedial line with a rufous tinge on it; claviform with its extremity slightly defined by black; orbicular and reniform defined by the cell being deep black before and between them and with slight reddish-ochreous annuli, the former oblique; a slight oblique medial shade from lower angle of cell to inner margin; the postmedial line double, dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line represented by a more or less prominent series of ochreous points with slight dentate black marks on their inner side, angled outwards at vein 7 and excurved at middle. Hind wing yellowish brown; the underside with some pale irroration on costal area, a curved postmedial line.

Hab. Amurland, Ussuri; W. China, Ta-chien-lu (*Pratt*), 1 ♀, Chia-kou-ho (*Pratt*), 2 ♂, Omei-shan, 1 ♀, Wa-ssu-kou, 1 ♂, 1 ♀. *Exp.* 46–52 millim.

680. Agrotis renalis. (Plate LXX. fig. 6.)

Ochropleura renalis, Moore, P. Z. S. 1867, p. 55; Hmpsn. Moths Ind. ii. p. 188.
Ochropleura subpurpurea, Leech, Trans. Ent. Soc. 1900, p. 35.

Head and thorax dark brown mixed with rufous and the scales tipped with blue-grey; the tegulæ sometimes olive-ochreous except at tips; the metathorax with rufous crest; abdomen fuscous brown, the anal tuft tipped with ochreous. Fore wing dark brown suffused with purple-grey; the costal area ochreous or rufous to the postmedial line; a double subbasal line from costa to submedian fold, in which there is a short black streak; the antemedial line double, waved, excurved above inner margin and with oblique black streak before it in cell; claviform with its extremity slightly defined by black; orbicular and reniform defined by black, the former rounded or diamond-shaped, open above, the cell before and between the stigmata suffused with black; the postmedial line indistinct, double, minutely dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line indistinct, defined on inner side by an oblique black bar from costa, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing dark fuscous brown, with fine ochreous line at base of cilia; the underside irrorated with grey.

Hab. W. China, Omei-shan, 1 ♂, type *subpurpurea*, Wa-ssu-kou, 1 ♀; Punjab, Simla (*Harford*), 2 ♂, 2 ♀, Dalhousie, 1 ♀. *Exp.* 52–60 millim.

681. Agrotis consanguinea. (Plate LXX. fig. 7.)

Ochropleura consanguinea, Moore, P. Z. S. 1881, p. 353; Hmpsn. Moths Ind. ii. p. 188.

Head and thorax dark brown mixed with reddish brown, some of the scales tipped with grey; tegulæ sometimes ochreous except at tips; abdomen grey-brown, the anal tuft tinged with ochreous. Fore wing dark brown with a greyish gloss; the costal area ochreous or tinged with rufous to the postmedial line; the subbasal line represented by a black point below costa and a curved line between cell and vein 1, followed by a blackish patch with black point above it in cell; the antemedial line double, oblique, minutely waved; claviform with its extremity defined by black; orbicular and reniform defined by black and their centres by brown, the former round or somewhat oblique, elliptical, the latter with some rufous on its upper part, the cell before and between them black; the postmedial line double, dentate, and produced to points on the veins, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line defined on inner side by an oblique black bar from costa, slightly angled outwards at vein 7 and excurved at middle. Hind wing pale fuscous brown; the cilia grey with a brown line through them; the underside pale, the costal area thickly irrorated with fuscous, the terminal area suffused with fuscous.

Hab. Kashmir, Dras, 1 ♂, Scinde Valley, 1 ♂ (*Leech*); Punjab, Simla (*Harford*), 1 ♂, Dalhousie, 2 ♂, 1 ♀ type, Thundiani (*Yerbury*), 1 ♂, Murree (*Harford*), 1 ♂, Dharmsála (*Hocking*), 2 ♂, 6 ♀; Tibet, Yatung (*Hobson*), 1 ♂. *Exp.* 42–50 millim.

682. Agrotis costæstriga. (Plate LXX. fig. 8.)

Agrotis costæstriga, Staud. Iris, viii. p. 305, pl. 5. f. 14 (1895); id. Cat. Lep. pal. p. 139.

♂. Head and thorax black mixed with purplish red and suffused with grey; palpi at tips and frons white; tarsi with whitish rings; abdomen ochreous brown, darker below. Fore wing purplish fuscous suffused with grey, especially on basal costal area and near the postmedial line; the subbasal line double, waved, from costa to submedian fold, with a point in the cell beyond it; the antemedial line strong, black, oblique from costa to median nervure, then indistinct, waved; the claviform defined by black above; the cell and costal area in medial area black suffused with blue-grey; orbicular and reniform defined by black, the former oblique, oblong, open above, the latter open below; a slight line from lower angle of cell to inner margin; the postmedial line dentate and produced to points on the veins, obsolescent except towards costa, slightly bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line represented by an indistinct series of small ochreous and brown spots and an oblique black bar from costa; a terminal series of black points. Hind wing fuscous brown with an ochreous tinge; cilia

more ochreous; the underside with the costal area purplish red irrorated with grey and black, a discoidal lunule and sinuous postmedial line.

Hab. Tibet, Amdo, Sinin Mts., 1 ♂. *Exp.* 38 millim.

683. Agrotis bicarnea. (Plate LXX. fig. 9.)

Noctua bicarnea, Guen. Noct. i. p. 329 (1852); Smith, Cat. Noct. N. Am. p. 71.
Mamestra plagiata, Wlk. xxxii. 664 (1865).

Head, tegulæ, and base of patagia more or less mixed with black; palpi except at extremity, sides of frons, and vertex of head black; frons with whitish bar above; thorax grey, more or less tinged with brown or fuscous; abdomen ochreous white tinged with fuscous, the anal tuft fulvous. Fore wing purplish fuscous; the subbasal line pale, defined on each side by black, curved, from costa to vein 1, an ochreous brown-suffused patch on costal area, with black mark below it in submedian fold from the subbasal to the antemedian line, which is pale defined on each side by black, slightly sinuous and incurved to costa; claviform obsolete; orbicular and reniform fuscous, with grey annuli and black outlines, the former oblique, elliptical, often open above, the latter open below, the cell before and between the stigmata deep black; the postmedial line double, defined on each side by black, minutely waved, excurved from below costa to vein 4, then oblique; some pale points on costa towards apex; a sinuous subterminal series of small ochreous and black dentate marks with a diffused black patch on costa. Hind wing ochreous white suffused with fuscous brown, uniformly in female, deepening to termen in male; cilia ochreous with a brown line through them; the underside paler, with dark discoidal lunule and sinuous postmedial line.

Hab. Canada (*Norman*), 2 ♂, Renfrew Co., 1 ♀, Br. Columbia; U.S.A., Northern States east of Rocky Mts., Trenton Falls (*Doubleday*), 4 ♀, type *plagiata*, Massachusetts, Beverly, 5 ♂, 3 ♀, Colorado. *Exp.* 40–42 millim.

Larva. Dyar, Proc. Ent. Soc. Wash. iv. p. 317 (1899).

Head 3·5 millim., pale, distinctly reticulated, the vertical curved band very heavy and nearly black, distinct below, without spot in clypeus; line from eye distinct on lower half of face. Body a little flattened, light brown, streaked and mottled with darker brown; dorsal and subdorsal lines pale, narrow, about alike, the former broadly bordered with a dark brown area which is retracted at the incisures, the latter narrowly brown-bordered, thus leaving a pale space between that widens at the incisures; a broad dark brown suprastigmatal band just enclosing the spiracles, edged below by the whitish, narrow, slightly waved upper line of the substigmatal band, which is pale, faint, reddish, sharply edged, nearly concolorous with the light brown subventral area; spiracles brown, black-rimmed. Probably a general feeder.—H. G. D.

684. Agrotis treati. (Plate LXX. fig. 10.)

Agrotis treati, Grote, Can. Ent. vii. p. 186 (1875); Smith, Cat. Noct. N. Am. p. 71.

♂. Head and thorax fuscous mixed with red-brown and grey; palpi black, white at tips; frons whitish, with black spots at sides; vertex and back of head with some black; patagia with white transverse lines; legs blackish, the tarsi ringed with white; abdomen white irrorated with brown. Fore wing greyish fuscous; the subbasal line black, defined by white on outer side, waved from costa to vein 1, and followed by a black streak in submedian fold; the antemedial line pale, defined by black on each side, oblique from costa to submedian fold and angled inwards on vein 1; the claviform small, irregular, black; orbicular and reniform concolorous with greyish outline, defined by black in the cell before and between them and on outer edge of latter, both open above and below; postmedial line pale, defined on each side by black, excurved from costa to vein 4, then incurved; an irregular subterminal series of small dentate black marks. Hind wing ochreous white tinged with brown, especially on the veins and towards termen; the underside with discoidal lunule, curved postmedial line, and dark apical patch.

Hab. U.S.A., Massachusetts, 1 ♂ type. *Exp.* 38 millim.

685. Agrotis normaniana. (Plate LXX. fig. 11.)

Agrotis normanianus, Grote, Trans. Am. Ent. Soc. v. p. 89 (1874); Smith, Cat. Noct. N. Am. p. 71.
Agrotis obtusa, Speyer, Stett. ent. Zeit. xxxvi. pp. 124, 126 (1875).

Head and thorax grey, mixed with purplish brown and irrorated with black; palpi black, white at tips; tarsi black, ringed with white; abdomen grey-brown, tinged with rufous at sides and extremity. Fore wing grey, more or less suffused with purple-brown and irrorated with fuscous; the subbasal line pale, defined on each side with black and curved from costa to vein 1; antemedial line pale, defined by black on each side, oblique, slightly sinuous and excurved to inner margin; the claviform represented by a black point at its extremity; orbicular and reniform grey with black outlines, the former rather V-shaped, open above, the latter open above and below and its outer edge broken up into points, the cell before and between the stigmata dark brown; a waved medial shade from lower angle of cell to inner margin; the postmedial line pale, defined on each side by fuscous, minutely waved, bent outwards below costa and slightly incurved below vein 4, often with a series of black points beyond it; a subterminal line angled outwards below costa and excurved at middle, with two small dentate black spots below costa; a terminal series of black points. Hind wing ochreous suffused with fuscous brown; the cilia ochreous; the underside ochreous irrorated with brown; a dark discoidal lunule and sinuous postmedial line.

Hab. Canada (*Norman*), 1 ♀, Renfrew Co., 1 ♂; U.S.A., Northern, Middle, & Eastern States, Trenton Falls (*Doubleday*), 3 ♂, 1 ♀, New York, 4 ♂, 1 ♀, type, Michigan, 1 ♀. *Exp.* 38–42 millim.

686. Agrotis collari. (Plate LXX. fig. 12.)

Agrotis kollari, Led. Verh. zool.-bot. Ges. Wien, 1853, p. 366, pl. 4. f. 1; Staud. Cat. Lep. pal. p. 139.
Ochropleura plumbata, Butl. Trans. Ent. Soc. 1881, p. 180.

Head and thorax grey, the former mixed, the latter largely suffused with purple-brown, a grey line near tips of tegulæ and a black streak near upper edge of patagia; abdomen grey, dorsally tinged with fuscous, the anal tuft with rufous. Fore wing purplish grey; the subbasal line prominent, black, defined by white on outer side, extending from costa to vein 1 and with black patch beyond it below the cell; the antemedial line double, angled outwards below costa, then incurved to above inner margin, where it is excurved; the medial area suffused with purplish red and fuscous; claviform defined by grey and black at extremity; orbicular and reniform purplish grey, defined by black and their centres by reddish brown, the former oblique, elliptical or rather V-shaped, open above, the latter large, the cell before and between them deep black; a diffused waved line from lower angle of cell to inner margin; the postmedial line double, minutely waved, with a series of black and white points on the veins beyond it, bent outwards below costa, slightly incurved at discal fold and more strongly below vein 4; the subterminal line defined by fuscous on inner side and by some dentate black marks towards costa, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules. Hind wing pale suffused with fuscous brown; the cilia whitish with brown line at base; the underside whitish, the costal area irrorated with fuscous, a slight discoidal lunule, curved postmedial line, and diffused subterminal band.

Ab. 1. *plumbata*. Thorax browner; fore wing with the medial area and stigmata more suffused with red-brown; hind wing darker brown.—Japan.

Hab. Russia, Urals; Siberia, 1 ♂, 1 ♀, Altai; Ussuri; Kamschatka; Japan, Tokio (*Maries*), 2 ♀, type *plumbata*, Yokohama (*Pryer*), 2 ♀. *Exp.* 44–52 millim.

687. Agrotis triangulum.

Phalæna triangulum, Hüfn. Berl. Mag. iii. p. 306 (1776); Steph. Ill. Brit. Ent., Haust. ii. p. 133; Staud. Cat. Lep. pal. p. 138.
Noctua sigma, Esp. Schmett. iv. pl. 186. ff. 1, 3 (1796); Hübn. Samml. Eur. Schmett., Noct. f. 497; Godt. Lép. Fr. v. p. 174, pl. 60. f. 6.

Head and tegulæ except tips brownish white; palpi blackish at sides except at tips; extremities of tegulæ and thorax red-brown; tarsi fuscous with pale rings; abdomen ochreous irrorated with dark brown, the anal tuft and ventral surface rufous. Fore wing pale greyish brown suffused with red-brown; the subbasal line pale,

with black spots on its inner side below costa and cell, a black patch beyond it below the cell with a point in cell above its extremity; the antemedial line double, the outer blackish and strong from costa to submedian fold, slightly angled outwards below costa, then oblique and slightly incurved to above inner margin, where it is angled outwards; claviform with its upper edge defined by black; orbicular and reniform with greyish annuli defined by black, the former oblique, V-shaped, open above, the latter constricted at middle, the cell before and between them black-brown; the postmedial line double, minutely dentate and produced to points on the veins and with a black striga on its inner edge at costa, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line greyish, slightly defined by brown on inner side and by an oblique black bar from costa, angled outwards at vein 7 and excurved at middle; a terminal series of small dark points. Hind wing brown; the cilia ochreous; the underside pale irrorated with brown, a small dark discoidal spot and curved postmedial line.

Hab. Britain, Scotland, England, Leech Coll.; France, Sand Coll.; Germany, Zeller Coll.; Switzerland; Italy; Dalmatia; Scandinavia; Russia, Livonia, Zeller Coll.; Armenia; Kashmir (*Thompson*), 1 ♂. *Exp.* 36–48 millim.

Larva. Meyr. Brit. Lep. p. 100; Barrett, Lep. Brit. iv. p. 46, pl. 142. f. 2.

Ochreous or brown speckled with black; dorsal line pale; a subdorsal series of oblique dark marks on somites 4–11, darker and confluent on 11 and followed by a pale bar; subspiracular line pale ochreous; head pale brown with blackish markings. Food-plants: *Rumex*, *Stellaria*, *Salix*, etc. 8–5.

688. Agrotis ditrapezium.

Noctua ditrapezium, Schiff. Wien. Verz. p. 312 (1776); Bork. Schmett. Eur. iv. p. 517; Hübn. Eur. Schmett., Noct. f. 472; Staud. Cat. Lep. pal. p. 139.

Noctua tristigma, Treit. Schmett. Eur. v. i. p. 243 (1825).

Head and thorax reddish brown, tinged with vinous red and slightly mixed with white; tegulæ with white line near tips; palpi blackish at sides except at tips; tarsi blackish with pale rings; abdomen brownish ochreous. Fore wing purplish fuscous, often largely tinged with red; the subbasal line greyish, defined by black striæ on each side of it and extending from costa to submedian fold, where there is a black patch beyond it with an oblique striga above it in cell; the antemedial line double, angled outwards below costa, oblique, and nearly straight to vein 1 and excurved above inner margin; claviform represented by a black point at its extremity; orbicular and reniform defined by black and their centres with brown, the former oblique, elliptical or somewhat triangular, open above, the cell before and between them deep black; an indistinct oblique waved line from cell to inner margin; the postmedial line double, minutely dentate, and produced to points on the veins, slightly bent outwards below costa, excurved to vein 4,

then incurved; the subterminal line ochreous, defined by reddish brown on inner side and by an oblique black bar from costa, angled outwards at vein 7, and excurved at middle. Hind wing ochreous, suffused with fuscous on costal and terminal areas, or nearly wholly suffused in female; the cilia ochreous; the underside with the costal and terminal areas irrorated with fuscous and the former suffused with purplish red.

Hab. Labrador, 1 ♂; Britain, Leech Coll.; France, Sand Coll.; Germany, Zeller Coll.; Austria, Leech Coll.; Switzerland, Frey Coll.; Italy; Bithynia; Siberia; W. Turkestan, Issyk-kul; E. Turkestan, Ili; Amurland, Ussuri. *Exp.* 42–50 millim.

Subsp. 1. Head, thorax, and fore wing darker and more purplish; hind wing without ochreous tinge except on cilia.

Hab. Japan, Hakodaté (*Andrews*), 1 ♀; W. China, Ta-chien-lu (*Pratt*), 1 ♂, 1 ♀, Huang-mu-chang (*Pratt*), 1 ♀.

Larva. Meyr. Brit. Lep. p. 190; Barrett, Lep. Brit. iv. p. 56, pl. 143. f. 1.

Pale dull pinkish ochreous with blackish irroration; dorsal line pale, obscure; a subdorsal series of dark marks on posterior somites, on somite 12 blackish, and sometimes connected, followed by a pale bar; subspiracular line pale; head ochreous with brown markings. Food-plants: *Rubus*, *Rumex*, *Salix*, etc. 8–5.

689. Agrotis conchis. (Plate LXX. fig. 13.)

Agrotis conchis, Grote, N. Am. Ent. i. p. 43 (1879); id. Ill. Essay, 51, pl. 1. f. 8; Smith, Cat. Noct. N. Am. p. 71.

♀. Head, tegulæ, and patagia pale chestnut, the extremity of tegulæ and upper part of patagia dark red-brown; dorsal part of thorax grey; pectus pale chestnut in front; tibiæ and tarsi rufous irrorated with black; abdomen grey suffused with rufous. Fore wing purplish grey with slight brown irroration; a pale patch tinged with rufous at base of costa, with the black subbasal line on it angled outwards below costa, and with a black and whitish point beyond it in cell; the antemedial line double, slightly sinuous and bent outwards to inner margin; claviform represented by a black point; orbicular and reniform chestnut with pale centres, yellowish annuli and black outline, the former oblique, U-shaped, open above, the latter open above and below, the cell before and between the stigmata and just beyond the reniform black with some rufous below it on median nervure; a waved medial shade from lower angle of cell to inner margin; the postmedial line double, minutely waved, strongly bent outwards below costa, excurved to vein 4, then slightly incurved and with slight series of points beyond it on the veins; subterminal line defined by grey on outer side, angled inwards below costa, where there is a diffused black patch on its inner side, and excurved at middle. Hind wing ochreous white suffused with brown, especially on terminal area; the underside with dark discoidal lunule and sinuous postmedial line.

Hab. U.S.A., Colorado (*Snow*), 1 ♀ type, New Mexico. *Exp.* 40 millim.

690. Agrotis junctura. (Plate LXX. fig. 14.)

Agrotis junctura, Moore, P. Z. S. 1881, p. 351; Hmpsn. Moths Ind. ii. p. 189.

♂. Head and thorax grey mixed with rufous and dark brown; tegulæ red-brown or blackish at tips; abdomen ochreous whitish, the anal tuft fulvous, the ventral surface irrorated with brown. Fore wing pale grey, the interspaces of costal area slightly streaked with brown; the subbasal line represented by a slight black striga from costa and a prominent oblique striga from median nervure to vein 1, defined by grey on outer side, a fine, very oblique black streak across cell beyond it; the antemedial line black defined by grey on inner side, oblique from costa to subcostal nervure, then inwardly oblique and very strongly angled outwards above inner margin; claviform tinged with fuscous and prominently defined by black; orbicular and reniform grey defined by black, the former oblique, elliptical, open above, the latter with some pink and fuscous at centre and angled inwards on median nervure, the cell before and between them black and the area below the cell suffused with purplish pink; the postmedial line indistinct and produced to points on the veins, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line grey, slightly defined by brown on inner side and a black bar at costa, angled slightly outwards at vein 7 and excurved at middle, the area beyond it tinged with fuscous; a terminal series of small black lunules. Hind wing grey suffused with fuscous.

Hab. N.W. Himalayas, Dalhousie, 4 ♂ type. *Exp.* 40 millim.

*691. Agrotis tenuicola.

Agrotis tenuicola, Morr. Proc. Bost. Soc. N. H. xvii. p. 163 (1874); Smith, Cat. Noct. N. Am. p. 67.

Pale greyish brown tinged with rufous. Fore wing with the subbasal line excurved below costa, a dark point beyond it in cell; a double somewhat dentate antemedial line angled outwards below costa and above inner margin; claviform represented by some black scales; orbicular and reniform with brownish centres and pale annuli partially defined by blackish; an indistinct waved medial shade; the postmedial line minutely waved, bent outwards below costa, somewhat angled beyond cell, incurved below vein 4; subterminal line defined by two dentate black marks on its inner side below costa, then by a slight shade, somewhat angled outwards below costa and excurved at middle, placed rather near termen; a terminal series of small black lunules. Hind wing uniform grey.

Hab. U.S.A., New York. *Exp.* 33 millim. This species is unknown to me.

692. Agrotis depuncta.

Noctua depuncta, Linn. Faun. Suec. p. 321 (1757); Esp. Schmett. pl. 177. f. 3; Godt. Lép. Fr. ii. p. 191, pl. 62. ff. 3, 4; Steph. Ill. Brit. Ent., Haust. ii. p. 133; Staud. Cat. Lep. pal. p. 141.

Noctua mendosa, Hübn. Schmett. Eur., Noct. ff. 120, 502 (1827).
Agrotis pontica, Staud. Iris, iv. p. 266 (1891).
Agrotis consenescens, Staud. Iris, iv. p. 266 (1891).

Head and thorax red-brown mixed with grey and irrorated with dark scales; palpi black-brown except at tips; abdomen ochreous brown irrorated with fuscous, the anal tuft rufous. Fore wing grey-brown more or less strongly tinged with rufous and irrorated with black scales; the subbasal line represented by small black spots below costa and cell; the antemedial line whitish, oblique, minutely waved, with black spots on its outer side below costa and in and below cell; claviform with its upper edges defined by whitish; orbicular and reniform large, defined by whitish, the former oblique, elliptical, open above, a diffused brown medial shade passing between the stigmata; the postmedial line double, with a series of black points beyond it on the veins and with black point on its inner side at costa, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line greyish, slightly defined by red-brown on inner side and with an oblique dark bar before it from costa, angled outwards at vein 7 and excurved at middle; a terminal series of small dark lunules. Hind wing ochreous suffused with fuscous brown, especially towards termen, the cilia ochreous; the underside with the costal and terminal areas irrorated with fuscous, a small dark discoidal spot and sinuous postmedial line.

Ab. 1. *pontica*. Fore wing reddish or violaceous grey; hind wing whitish.—Pontus, Turcomania.

Ab. 2. *consenescens*. Fore wing yellowish grey.—Pontus.

Hab. Britain, England, Wales, Leech Coll.; France; Germany, Zeller Coll.; Switzerland, Frey Coll.; Sweden; Russia, Livonia, Sarepta; Armenia; Asia Minor, Pontus; W. Turkestan, 1 ♂, Issyk-kul. *Exp.* 40–46 millim.

Larva. Meyr. Brit. Lep. p. 104; Barrett, Lep. Brit. iv. p. 43, pl. 142. f. 1. Dull brown, with a dorsal series of darker-outlined diamond-shaped marks; spiracular line dark, diffused; spiracles white with dark edges; subspiracular line ochreous white; head pale brown with dark markings. Food-plants: *Primula*, *Urtica*, *Rumex*, etc. 9–5.

693. Agrotis baja.

Noctua baja, Fabr. Mant. Ins. ii. p. 175 (1787); Hübn. Schmett. Eur., Noct. iii. pl. 25. f. 119; Staud. Cat. Lep. pal. p. 138; Smith, Cat. Noct. N. Am. p. 70.
Noctua baja, var. *punctata*, Auriv. Nord. Fjär. p. 115 (1888).
Agrotis bajula, Staud. Stett. ent. Zeit. 1881, p. 411.
Agrotis smithii, Snell. Tijd. v. Ent. xxxix. p. 157 (1896).

Head and thorax red-brown slightly mixed with purple-grey; palpi black, pale at extremity; tarsi blackish with pale rings; abdomen pale rufous, greyish ochreous towards base. Fore wing red-brown suffused with purplish grey; the subbasal line double, waved from costa to submedian fold, with a black point usually present just beyond it in the cell; a double, waved, antemedial

line; claviform indistinct, its extremity defined by brown scales; orbicular and reniform with grey annuli and brown outlines, the former large, round, the latter large with some fuscous suffusion in its lower extremity; some darker brown suffusion between the stigmata, a waved medial shade from cell to inner margin, and a dark striga on costa above the reniform; the postmedial line double, crenulate, excurved from costa to vein 4, then incurved, the outer line with black and grey points on the veins; a subterminal line angled outwards at vein 7 and excurved at middle, and with two prominent black points on it below costa. Hind wing ochreous suffused with brown; the cilia tinged with rufous; the underside suffused with rufous especially on costal area; a discoidal lunule and sinuous postmedial line sometimes present.

Ab. 1. *bajula*. Ground-colour darker brown, much more suffused with grey.

Ab. 2. *punctata*. Fore wing with series of black points on the lines.

Hab. Canada, Renfrew Co., 3 ♂, Vancouver I. (*J. J. Walker*), 3 ♂; U.S.A., N. States, 3 ♂, 4 ♂, Massachusetts, Beverly, 1 ♀, New York, Trenton Falls (*Doubleday*), 1 ♂; C. & S. Europe; Britain; Germany, Berlin, 3 ♂, 1 ♀, Frankfort, 1 ♂, 2 ♀, Silesia, 1 ♂; Italy; Norway, Geiranger, 2 ♂; Russia, Livonia, 1 ♀, Urals; Armenia; W. Turkestan, Ala Tau, Issyk-kul; Tibet, Amdo; E. Siberia, Amur, 1 ♀, Kentei; Japan, Yokohama (*Jonas*), 1 ♀. *Exp.* 40–44 millim.

Larva. Meyr. Brit. Lep. p. 106; Barrett, Lep. Brit. iv. p. 85, pl. 147. f. 1.

Grey, brown, or reddish brown; dorsal and subdorsal lines pale, with a series of oblique dark marks between them; spiracular line pale; a pale bar on somite 12; head pale brownish with darker markings. Food-plants: *Salix*, Hawthorn, Birch, *Primula*, etc. 9–5.

*694. Agrotis vibora. (Plate LXX. fig. 15.)

Agrotis vibora, Dognin, Ann. Soc. Ent. Belge, xli. p. 28 (1897).

♂. Head and tegulæ brownish ochreous; palpi blackish at sides; thorax deep rufous; abdomen brownish ochreous, the anal tuft and ventral surface tinged with rufous. Fore wing bright purplish red-brown, the costal area ochreous white to beyond middle, at base extending to just below the cell; some black below base of cell; orbicular and reniform small, fuscous with grey annuli, the cell before and between them and just beyond reniform deep black; median nervure streaked with white; traces of a pale sinuous subterminal line; a terminal series of black points. Hind wing semihyaline white, the costal area and termen tinged with brown, the cilia with purplish points towards apex; the underside with the costal area suffused with rufous, a small dark discoidal spot and curved postmedial series of points on the veins.

Hab. Ecuador, Loja, type † ♂ in Coll. Dognin. *Exp.* 32 millim.

695. Agrotis plecta.

Noctua plecta, Linn. Faun. Suec. p. 321 (1761); Hübn. Schmett. Eur., Noct. f. 117; Hmpsn. Moths Ind. ii. p. 183; Smith, Cat. Noct. N. Am. p. 74; Staud. Cat. Lep. pal. p. 142.
Ochropleura vicaria, Wlk. x. 409 (1856).
Agrotis unimacula, Staud. Stett. ent. Zeit. 1859, p. 213; Ramb. Cat. Syst. And. pl. 11. f. 3.
Ochropleura costalis, Moore, P. Z. S. 1867, p. 56.
Agrotis anderssoni, Lampa, Tidskr. 1885, p. 54.
Agrotis glaucimacula, Gräs. Berl. ent. Zeit. 1888, p. 321.
Ochropleura ignota, Swinh. P. Z. S. 1889, p. 411.

Head and thorax purple-red, the head and tegulæ pale; palpi blackish except at extremity; tegulæ black at base; pectus and legs dark brown, the fore tibiæ on outer side and first two tarsal joints, the tips of spurs and tibiæ of mid and hind legs whitish; abdomen dorsally whitish, more or less tinged with fuscous, the anal tuft fulvous, the ventral surface dark purplish red. Fore wing purple red-brown; the costal area broadly whitish to beyond middle; the base of inner area whitish, and the base of median nervure streaked with white; orbicular and reniform small, grey, with white annuli, the former round or elliptical, the cell before and between the stigmata and one to three streaks beyond the reniform black; a more or less indistinct minutely dentate black postmedial line, excurved from below costa to vein 4 and angled inwards in submedian fold; some pale points on costa towards apex; a subterminal series of small dentate whitish marks angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pure white; the costal area usually tinged with fuscous; a terminal series of dark striæ; cilia yellowish; the underside with dark discoidal point and indistinct postmedial and subterminal lines on costal area.

Ab. 1. Fore wing with the costal area purple, leaving white streaks on subcostal and median nervures.

Ab. 2. *unimacula*. Fore wing with the orbicular stigma absent.

Ab. 3. *anderssoni*. Hind wing fuscous.—Sweden.

Ab. 4. *glaucimacula*. Fore wing with the stigmata entirely grey, the ground-colour often purplish fuscous; the hind wing yellowish, often with more or less developed postmedial line and terminal band.—Amur; Japan.

Ab. 5. *ignota*. Fore wing with the black in cell absent.

Hab. Canada, Nova Scotia (*Redman*), 1 ♂; U.S.A., Eastern States, Massachusetts, Beverly, 2 ♂, 4 ♀, New York, Trenton Falls, 1 ♀, Texas; Britain; France; Germany, Zeller & Frey Colls.; Spain; Corsica; Italy; Scandinavia; Russia, Livonia, 1 ♀; Armenia; Amur, 2 ♂, 2 ♀; Japan, Hakodate (*Pryer*), 2 ♂; Corea, Gensan (*Leech*), 1 ♂; Sikhim, 2 ♂, 2 ♀, type *costalis*; Ceylon (*Fairlie*), 2 ♂ type *ignota*; C. Colony (*Dr. Smith*), 1 ♂ type *vicaria*. *Exp.* 34 millim.

Larva. Meyr. Brit. Lep. p. 95; Barrett, Lep. Brit. iv. p. 40, pl. 141. f. 2. (Redescribed.) Head 2·5 millim., shining pale brown, reticulate in darker brown, ventral bands straight, broad, confluent centrally;

line upward from eye broad, not darker than the reticulations. Body brown, finely mottled on a greenish ground; dorsal line white, narrow, developed into a series of white specks on the centres of the segments, often conspicuous. Cervical shield brown, cut by whitish dorsal and subdorsal lines. Subdorsal line narrow, white, defined by obscure brown shades; substigmatal band broad, white, similarly defined, faintly brownish filled, distinct from the darker subventral region. Spiracles black-rimmed.

A general feeder.—H. G. D.

696. Agrotis leucogaster.

Noctua leucogaster, Frr. Neu. Beitr. Schmett. i. p. 38, pl. 21 (1831); Boisd. Icones, pl. 83. f. 6; Dup. Lép. Fr., Suppl. iii. p. 222, pl. 20. f. 5; Herr.-Schäff. Schmett. Eur., Noct. f. 1; Staud. Cat. Lep. pal. p. 142.

Head and thorax grey, thickly irrorated with red-brown, and with two brown spots between antennæ; palpi dark rufous except at tips; tegulæ whitish tinged with rufous to brown-pink, a black patch at base; fore tibiæ and tarsi whitish; mid tibiæ and tarsi blackish; abdomen white, tinged with purplish red towards extremity and on ventral surface. Fore wing silky purplish brown, the costal area white tinged with purplish pink to beyond middle extending to middle of cell; a black-brown streak in lower part of cell extending to submedian fold from base to origin of vein 2; orbicular and reniform very small, with fuscous centres and white annuli, the former oblique, elliptical, the latter with the black streak extending beyond it as a small triangular spot ending in a short ochreous streak, sometimes with another above it; the postmedial line represented by an oblique series of black points on the veins from vein 4 to inner margin; the subterminal line sometimes represented by slight dark marks, the terminal area rather darker and irrorated with grey, a terminal series of small black spots with grey on their inner sides. Hind wing semihyaline white; the underside with the costal area suffused with purplish pink, a postmedial series of black points on the veins and a terminal series in the interspaces of the costal half.

Hab. S. Europe, S. France, Zeller & Frey Colls., Dalmatia, Leech Coll.; Palestine. *Exp.* 36 millim.

Larva. Mill. Ann. Soc. Linn. Lyon, xiv. p. 327, pl. 74. ff. 6–8.

Head orange, striated with brown; dorsal area dull olive-brown, the dorsal line grey; stigmatal line white, the stigmata edged with black; the sublateral area yellow; the ventral area blue-grey. Food-plant, *Lotus*.

*697. Agrotis plectina.

Agrotis plectina, Mssn. Stübel's Reise, p. 144, pl. vi. f. 28 (1890).

♀. Head and thorax brownish ochreous; tegulæ yellow, with dark brown terminal band; abdomen greyish yellow, the ventral surface ochreous; tarsi brown ringed with ochreous. Fore wing brown; the costal area yellowish white to the postmedial line; a

black fascia below base of cell and a yellowish-white fascia above base of inner margin; the subbasal and antemedial lines represented by double black striæ from costa; orbicular and reniform well-developed, white defined by black, the former rounded, confluent with costal area, the cell before and between them and the area just beyond the reniform blackish; traces of a waved medial shade; postmedial line double, dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line defined by a dark shade on inner side and more prominent patch at costa; a terminal series of dark points. Hind wing pure white.

Hab. Ecuador, Collanes am Altar. *Exp.* 46 millim. This species is unknown to me; type in Berlin Mus., structural characters examined by Prof. Karsch.

698. Agrotis signa.

Noctua signum, Fabr. Ent. Syst. iii. 2, p. 65 (1775); Godt. Lép. Fr. ii. p. 209, pl. 64. f. 1; Staud. Cat. Lep. pal. p. 135.
Noctua sigma, Schiff. Wien. Verz. p. 78 (1776); Hübn. Samml. Eur. Schmett., Noct. f. 122.
Noctua characterea, Esp. Schmett., Text, p. 471 (1786).
Noctua nubila, Esp. Schmett. iv. pl. 142. f. 3 (1786).
Noctua ditrapezium, Esp. Schmett. iv. pl. 147. ff. 1, 2 (1786), *nec* Schiff.
Noctua umbra, View. Verz. Schmett. p. 67 (1789).

Head and tegulæ reddish ochreous; palpi blackish except at tips; tips of tegulæ and thorax black-brown, the scales often tipped with grey; abdomen blackish, mixed with brown or grey. Fore wing purplish red, more or less completely suffused with fuscous black, leaving the costal area reddish ochreous to beyond the postmedial line; the subbasal line double, waved, from costa to submedian fold in which there is a short black streak; antemedial line double, oblique, irregularly dentate; claviform moderate, defined by black; orbicular and reniform with brownish centres and ochreous annuli defined by black, the former round or somewhat quadrate, the cell before and between them more or less suffused with black; an indistinct oblique waved line from cell to inner margin; the postmedial line double, dentate, and produced to points on the veins, filled in with ochreous, bent outwards below costa, oblique to vein 4, then incurved; the subterminal line ochreous, punctiform, defined on inner side by dentate black marks at middle, angled outwards at vein 7 and excurved at middle; a terminal series of ochreous and black points. Hind wing fuscous brown, the cilia greyish at tip; the underside grey irrorated with fuscous, a small discoidal spot, sinuous postmedial line, and diffused subterminal band.

Ab. 1. Fore wing with the costal and terminal area except towards tornus, flesh-colour.

Hab. France, Sand Coll.; Germany, Zeller & Frey Colls.; Austria, Leech Coll.; Switzerland, Zeller Coll.; Armenia; W. Siberia, Altai; Amurland, Ussuri. *Exp.* 38–46 millim.

Larva. Kirby, Eur. Butt. & Moths, p. 193.

Pale copper-coloured, with three pale lines on dorsal area with

yellow transverse lines between, bordered with brown in front and curved forward at sides, and with two white dots before each. Food-plants : low plants, especially *Atriplicis*. 4–5.

699. Agrotis albipennis.

Cosmia albipennis, Butl. Ill. Het. B. M. vii. p. 58, pl. 127. f. 13 (1889); Hmpsn. Moths Ind. ii. p. 186.

♂. Head and thorax pale purplish pink, the scales tipped with whitish; palpi dark rufous except at tips; tegulæ edged with dark brown; tarsi fuscous with pale rings; abdomen pale purplish pink. Fore wing pale purplish pink; the subbasal line strong, black, oblique from costa to submedian fold where it is angled, ending at vein 1, a dark streak from it in submedian fold to the antemedial line, which is developed into an oblique black bar from costa, then fine, angled inwards in cell, outwards on median nervure, inwards in submedian fold, then very oblique to above middle of inner margin, where it is angled; claviform finely defined by brown above and at extremity; orbicular and reniform defined by brown, the former large, oblique, elliptical, open above, the latter placed on an olive-brown patch from costa; an indistinct curved medial line from cell to inner margin; the postmedial line black towards costa, slightly angled inwards below costa, then outwards, then obliquely curved to vein 4, then incurved and sinuous; the subterminal line brown, with an olive-brown patch with pale points on it on its inner side at costa, angled outwards slightly at vein 7 and excurved at middle; a fine terminal line. Hind wing yellowish white; a fine dark terminal line; the cilia tinged with pink towards apex; the underside with the costal area tinged with red, a small dark discoidal spot and curved postmedial line.

♀. Hind wing suffused with fuscous brown.

Hab. W. China, Chang-yang (*Pratt*), 1 ♂; Kashmir, Kuijar, 1 ♂, Narkunda, 1 ♀ (*McArthur*); Punjab, Dharmsála (*Hocking*), 4 ♂, 3 ♀. *Exp.* 40 millim.

700. Agrotis repleta. (Plate LXX. fig. 16.)

Agrotis repleta, Wlk. xi. 736 (1857).
Agrotis ypsilon, Druce, Biol. Centr.-Am., Het. i. p. 281 (part).

♂. Head and tegulæ blackish mixed with red-brown; tegulæ with black medial line; thorax rufous; mid and hind tibiæ blackish ringed with ochreous; abdomen rufous dorsally suffused with fuscous. Fore wing ochreous suffused with reddish brown; the basal area with fine brown and ochreous streaks below costa and in cell; the subbasal line represented by ochreous striæ from costa and cell; the antemedial line double, very highly dentate, acutely angled outwards below costa and very strongly inwards on median nervure and vein 1; claviform small, slightly defined by black; orbicular and reniform small, defined by black and their centres defined by rufous, the former round, a black fascia between them in cell; a slight medial shade from cell to inner margin; the postmedial line double, dentate,

and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line ochreous, defined on inner side by a series of dentate black marks and elongate blackish patch on costal area, with some ochreous points on costa, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing semihyaline white; the costal and inner areas tinged with brown; the underside with the costal area ochreous white irrorated with brown.

♀. Fore wing with the area below the cell and postmedial area suffused with purplish fuscous.

Hab. Mexico (*Sallé*), 1 ♀ type, Jalapa (*Trujillo*), 2 ♂, 1 ♀, Godman-Salvin Coll.; Brazil, Amazons, Rio Purus (*Trail*), 1 ♂, Organ Mts. (*Wagner*), 1 ♂. *Exp.* 56 millim.

701. Agrotis crinigera. (Plate LXX. fig. 17.)

Spælotis crinigera, Butl. A. M. N. H. (5) vii. p. 321 (1881).

Dull reddish brown; tarsi with pale rings; abdomen of male with very large protrusible genital tufts. Fore wing with a greyish tinge and black irroration or suffusion; a double, waved, subbasal line from costa to submedian fold; a double, waved, antemedial line very strongly angled outwards above inner margin; claviform faintly defined by blackish above; orbicular and reniform with blackish centres and defined by black, the former round, a diffused waved medial line passing between them; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then oblique; an indistinct greyish subterminal line defined by fuscous suffusion on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing yellowish brown; the cilia white at tips; the underside whitish with slight discoidal lunule and waved postmedial line.

Hab. Hawaii, Honolulu (*Blackburn*), 3 ♂, 4 ♀, type, Oahu (*Perkins*), 1 ♀. *Exp.* 46–58 millim.

702. Agrotis compta. (Plate LXX. fig. 18.)

Graphiphora compta, Wlk. x. 404 (1856).
Tæniocampa immunis, Wlk. x. 430 (1855).
Graphiphora quadrata, Wlk. xi. 745 (1857).
Cerastis innocua, Wlk. xv. 1710 (1858).
Apamea reciproca, Wlk. xxxii. 672 (1865).
Orthosia breviuscula, Wlk. xxxiii. 716 (1865).
Orthosia communicata, Wlk. xxxiii. 716 (1865).
Agrotis acetina, Feld. Reis. Nov. pl. 109. f. 6 (1874).

Head and thorax ochreous or reddish brown; palpi deep red-brown, pale at tips; sides of frons black; legs deep red-brown; abdomen grey-brown. Fore wing ochreous brown irrorated with red-brown; an indistinct double, waved, subbasal line from costa to submedian fold; traces of a dentate antemedial line; claviform represented by a black point; orbicular and reniform defined by brown, the former very indistinct, round, the latter with pale

annulus and often a black patch in lower extremity; an oblique sinuous medial shade from lower angle of cell to inner margin; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; a pale subterminal line slightly angled outwards at vein 7 and excurved at middle, defined on inner side by a rufous patch at costa, then by small spots; a crenulate terminal line; cilia rufous, with dark line near tips. Hind wing fuscous brown, the cilia rufous; the underside pale purplish red irrorated with fuscous, and with curved postmedial line.

Hab. New Hebrides, 1 ♂ type *innocua*, Coll. H.M.S. 'Herald'; N. S. Wales, Moreton Bay (*Diggles*), 2 ♂, types *reciproca* and *breviuscula*, Sydney (*Wood*), 1 ♀ type, (*Raynor*) 13 ♂, 6 ♀; Victoria, Gisborne (*Lyell*), 1 ♂, 2 ♀; Tasmania (*Smith*), 1 ♀ type *quadrata*; New Zealand (*Oxley, Skelton, Colenso*), 2 ♂, 1 ♀, types *immunis* and *communicata*, type† ♂ *acetina* in Coll. Rothschild. *Exp.* 36–38 millim.

Larva. Lidgett, Transformations of Australian Lepidoptera, p. 15.

Elongate, tapering anteriorly, the anal somite slightly humped; ochreous ocellated with fulvous; the two anal somites with black subdorsal stripes and the terminal somite with lateral stripe; 3rd to 9th somites dorsally orange shaded with brownish, defined by a narrow black stripe; a broken dorsal line; the rest of larva drab or slaty brown with a rather broad pale lateral stripe. Head small, with an H-shaped yellow mark in front, laterally dilated and ocellated with yellow; ventral surface, legs, and claspers clay-yellow. Length 1½ inches. Food-plant, *Urtica*.

Pupa pale red; the wing-covers with fine black lines indicating the veins; segmental incisions defined by bands of deep shining punctures.

Cocoon formed of a few leaves of food-plant drawn together by silk and cemented to box.

*703. Agrotis herculeana. (Plate LXX. fig. 19.)

Noctua herculeana, Schaus, J. N. Y. Ent. Soc. vi. p. 107 (1898).

♀. Head and tegulæ red-brown mixed with grey; thorax purple-brown mixed with grey; pectus, legs, and abdomen fuscous mixed with grey. Fore wing pale grey-brown irrorated with purple-brown, the basal and medial areas purple-brown; a double, waved, black subbasal line from costa to submedian fold, the outer line stronger; a double antemedial line commencing as two strong black strigæ from costa, then oblique to vein 1, where there is a black point before it, then excurved to inner margin; the orbicular purplish fuscous, open V-shaped, the reniform large, cream-colour irrorated with black, the cell before and between the stigmata black; traces of a waved medial line from cell to inner margin; a double minutely waved postmedial line with a series of dark points on the veins beyond it, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line defined by the area beyond it being

purple-fuscous, angled outwards at vein 7 and excurved at middle ; a fine pale line at base of cilia. Hind wing fuscous, whitish towards base ; the underside whitish, irrorated with fuscous and tinged with purplish red towards costa.

Hab. Mexico, Trojes, type † ♀ in Coll. Schaus. *Exp.* 64 millim.

704. Agrotis rhomboidea.

Noctua rhomboidea, Esp. Schmett., Eur. iv. pl. 149. f. 3 (1790) ; Godt. Lép. Fr. v. p. 193, pl. 62. f. 5 ; Frey. Neue Beitr. Schmett. iv. pl. 309.
Noctua stigmatica, Hübn. Samml. Eur. Schmett., Noct. ff. 470, 471 (1827) ; Staud. Cat. Lep. pal. p. 140.
Graphiphora tristigma, Steph. Ill. Brit. Ent., Haust. ii. p. 132 (1829).

Head and thorax red-brown mixed with grey ; palpi darker at sides except at tips ; abdomen ochreous brown tinged with rufous below. Fore wing red-brown, largely suffused with purplish ; the subbasal line double, the inner black, excurved below costa and ending at submedian fold ; the antemedial line double, defined on outer side by black from costa to below cell, slightly angled outwards on subcostal nervure and inwards in submedian fold, then oblique to above inner margin where it is slightly angled ; claviform small, obscurely defined by brown ; orbicular and reniform with slight whitish annuli, the former somewhat elliptical, open above, the cell before and between them deep brown ; an oblique shade from lower angle of cell to inner margin ; the postmedial line double, very minutely waved, bent outwards below costa, excurved to vein 4, then incurved ; the subterminal line slight, greyish defined by fuscous suffusion on inner side, angled outwards at vein 7, excurved at middle and at inner margin ; a fine waved terminal line. Hind wing brown, with an ochreous tinge towards base and inner margin ; cilia pale at tips ; the underside paler, the costal area tinged with purplish and irrorated with brown, the terminal area suffused with fuscous, a slight discoidal spot and curved postmedial line.

Hab. Britain, Leech Coll. ; France, Saud Coll. ; Germany, Zeller & Frey Colls. ; Austria ; Switzerland ; N. Italy ; Denmark ; Sweden ; Russia, Livonia. *Exp.* 38–40 millim.

Larva. Meyr. Brit. Lep. p. 103 ; Barrett, Lep. Brit. iv. p. 60, pl. 143. f. 2.

Reddish brown or deep brown ; dorsal and subdorsal lines pale ochreous or greenish, sometimes indistinct, the subdorsal line usually edged above by dark wedge-shaped marks on somites 8–11 ; the subspiracular line pale ochreous ; a pale bar on somite 11 ; head brown with darker markings.

Food-plants : *Rumex*, *Primula*, *Stellaria*, etc. 9–5.

705. Agrotis descripta.

Noctua descripta, Brem. Lep. Ost-Sib. p. 51, pl. 4. f. 11 (1864).
Agrotis pachnobides, Staud. Stett. ent. Zeit. 1888, p. 246 ; id. Rom. Mém. vi. p. 406, pl. 6. f. 3 ; id. Cat. Lep. pal. p. 136.

♂. Head and thorax purplish grey mixed with red-brown ; palpi, vertex of head, pectus, and legs purplish red ; abdomen grey

irrorated with fuscous, the anal tuft and ventral surface rufous. Fore wing purplish grey, irrorated and in places suffused with red-brown; a double, waved, subbasal line from costa to submedian fold; a double oblique slightly waved antemedial line; orbicular and reniform rather indistinctly defined by brown, the former round, the cell between them dark red-brown; an oblique diffused sinuous line from lower angle of cell to inner margin; the postmedial line minutely waved, defined by purplish grey on outer side, then the ground-colour darker, bent outwards below costa, slightly incurved at discal fold, incurved below vein 4; the subterminal line grey, angled outwards at vein 7 and excurved at middle; a fine dark terminal line. Hind wing ochreous whitish, suffused with fuscous towards costa and termen; a fine dark terminal line; cilia pale rufous; the underside with the costal area suffused with purplish red, a dark discoidal point and sinuous postmedial line.

♀. Darker, and with hardly any of the rufous tints.

Hab. Amurland, Ussuri, 4 ♂, 2 ♀. *Exp.* 36–40 millim.

706. Agrotis punicea.

Noctua punicea, Hübn. Samml. Eur. Schmett., Noct. f. 115 (1827); Godt. Lép. Fr. v. pl. 63. f. 5; Boisd. Icones, pl. 83. f. 4; Staud. Cat. Lep. pal. p. 136.

Head and thorax rufous, the tegulæ edged with grey; abdomen ochreous brown, the anal tuft and ventral surface more rufous. Fore wing greyish ochreous irrorated with white especially on the veins, the terminal area suffused with rufous; a double, waved, subbasal line from costa to submedian fold filled in with grey; a similar oblique antemedial line extending to inner margin; orbicular and reniform defined by rufous, the former round; a diffused medial red-brown line passing between them, angled outwards on median nervure; the postmedial line double, filled in with grey, bent outward below costa, very slightly incurved at discal fold and rather more strongly below vein 4; the subterminal line grey, angled outwards at vein 7 and excurved at middle; the veins of terminal area with slight dark streaks. Hind wing ochreous suffused with fuscous brown; cilia purplish pink; the underside paler, irrorated with fuscous, the costal area suffused with purplish pink, a slight discoidal point and sinuous postmedial line.

Hab. France, Sand Coll.; Belgium; Germany, Bavaria, Saxony, Zeller Coll.; Austria, Leech Coll.; Hungary, Zeller Coll.; Switzerland, Leech Coll.; Russia, S. & Centr.; Siberia, Mongolia; Amurland, Ussuri. *Exp.* 36 millim.

707. Agrotis brunnea.

Noctua brunnea, Schiff. Wien. Verz. p. 83 (1776); Hübn. Samml. Eur. Schmett., Noct. f. 121; Godt. Lép. Fr. ii. p. 183, pl. 61. f. 4; Steph. Ill. Brit. Ent., Haust. ii. p. 131; Staud. Cat. Lep. pal. p. 140.
Noctua lucifera, Esp. Schmett. iv. pl. 142. f. 6 & pl. 188. ff. 4, 5 (1786).
Noctua arvensis, Gmel. Syst. Nat. i. 5, p. 2569 (1788).
Noctua fragaria, Bork. Schmett. iv. p. 497 (1792).

Noctua carnea, Thunb. Diss. iv. p. 55 (1792).
Agrotis hospitalis, Grote, Can. Ent. xiv. p. 184 (1882); Smith, Cat. Noct. N. Am. p. 72.
Cerastis subdolens, Butl. Trans. Ent. Soc. 1881, p. 181 (♀).

Head and thorax bright rufous, palpi deep rufous except at tips; tibiæ and tarsi blackish with ochreous rings; abdomen grey tinged with fuscous, the anal tuft and ventral surface rufous. Fore wing purplish irrorated with grey, especially on the veins and costal area, the cell between the stigmata and the area between reniform and postmedial line suffused with olive-rufous; the subbasal line double, minutely waved from costa to submedian fold; the antemedial line oblique, double, minutely waved and angled outwards below costa and above inner margin; claviform represented by a black and grey point at its extremity; orbicular round, slightly defined by brown or black; reniform with ochreous centre and annulus; the cell between the stigmata with its lower part often suffused with black; a medial shade angled outwards at lower angle of cell; the postmedial line minutely dentate and produced to black and grey points on the veins, bent outwards below costa, slightly angled inwards at discal fold, incurved below vein 4, the area beyond it darker, some pale points on costa towards apex; the subterminal line grey, slightly defined by red-brown on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of dark points. Hind wing fuscous brown; cilia rufous; the underside pale, the costal and terminal areas suffused with purplish red, a dark discoidal lunule and curved postmedial line.

Ab. 1. Head, thorax, and fore wing fuscous grey tinged with olive, and without the rufous and purple tints.—Scandinavia, Söndmore.

Hab. Britain, Leech Coll.; France, Sand Coll.; Germany, Zeller Coll.; Switzerland, Frey Coll.; Scandinavia, Söndmore, 1 ♂; Russia, Livonia, 1 ♂, Urals; W. Siberia, Altai; Amurland, Ussuri; Japan (*Maries, Pryer*), 2 ♀ type *subdolens* ♀. *Exp.* 38–48 millim.

Larva. Meyr. Brit. Lep. p. 101; Barrett, Lep. Brit. iv. p. 63, pl. 143. f. 3.

Brown or reddish brown; dorsal line pale or whitish ochreous with dark edges; a subdorsal series of oblique dark marks; lateral line pale yellowish, sometimes interrupted; spiracular line sometimes darker; subspiracular line flesh-coloured; a pale yellowish bar on somite 11; head pale brown with dark markings. Food-plants: *Salix, Rubus, Rumex*, etc. 9–4.

708. Agrotis exusta.

Graphiphora exusta, Butl. A. M. N. H. (5) i. p. 164 (1878); id. Ill. Het. B. M. ii. p. 28, pl. 29. f. 11; Staud. Cat. Lep. pal. p. 138.
Agrotis nigromaculata, Gräser, Berl. ent. Zeit. 1888, p. 320.

Head and thorax red-brown, purple-brown, or dark brown mixed with grey or wholly ochreous; palpi deep red or blackish, pale at tips; tibiæ and tarsi dark brown, the spurs with pale rings; abdomen fuscous brown, the ventral surface tinged with ochreous or

purplish. Fore wing purplish, more or less completely suffused with greyish ochreous, olive, or rufous; the subbasal line indistinct, angled outwards below costa and ending in a black point in submedian fold; antemedial line indistinct, double, angled outwards on subcostal nervure and above inner margin; the claviform usually represented by black points on outer edge of antemedial line and at its extremity; orbicular and reniform large, with ochreous annuli, the former round; the postmedial line double, oblique from costa to vein 6, then nearly erect and slightly bent inwards to inner margin, the area beyond it darker; the subterminal line indistinct, pale, defined by dark suffusion on its inner side, angled outwards at vein 7 and excurved at middle. Hind wing fuscous brown, the cilia grey at tips; the underside paler, the costal area irrorated with brown, the terminal area suffused with fuscous, a dark discoidal lunule and sinuous postmedial line.

Ab. 1. *nigromaculata*. Fore wing with deep black spots in cell before the orbicular and between the stigmata.

Hab. Amurland, Ussuri, 1 ♀; Japan, Yokohama (*Jonas*, *Whitely*, *Pryer*), 2 ♂, 4 ♀ type, Tokio (*Maries*), 1 ♂, 1 ♀, Hakodaté, 1 ♂, Myanoshita (*Yerbury*), 1 ♂, Hakone (*Eastlake*), 1 ♂; W. China, Chang-yang (*Pratt*), 2 ♂, 2 ♀, Kwei-chow, 1 ♀. *Exp.* 40–50 millim.

*709. Agrotis bolteri. (Plate LXX. fig. 20.)

Noctua bolteri, Smith, J. N. Y. Ent. Soc. vi. p. 104 (1898).

♀. Red tinged with violet, the markings rusty brown and black; (head and thorax rubbed). Fore wing with the subbasal line double, black, defined by brown scales, erect from costa to vein 1, then oblique to inner margin, the area beyond it shaded with brown on inner half, and with an erect black mark in cell defined on inner side by yellow scales; antemedial line double, the inner brown, the outer black with yellow between them, nearly erect from costa to vein 1, strongly excurved above inner margin; claviform large, broad with brown centre and yellow annulus defined by black; orbicular large, elliptical, incomplete above, with yellow annulus defined by black; reniform very large, broad, the centre brown with a white lunule, a yellow annulus defined by black; a brown medial shade; postmedial line double filled in with yellow, lunulate, bent outwards below costa, nearly straight to vein 4, then incurved; subterminal line yellow, defined on inner side by a strong dark shade, angled outwards at vein 7 and dentate on veins 4 and 3; a terminal series of black lunules defined by yellow on outer side. Hind wing smoky grey; cilia nearly white; the underside pale, a discoidal spot and incomplete postmedial line, the terminal area irrorated with carmine.

Hab. U.S.A., New Mexico, Las Vegas (*Bolter*). *Exp.* 33 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

710. Agrotis neurogramma. (Plate LXX. fig. 21.)

Agrotis neurogramma, Meyr. Faun. Hawai. i. p. 149 (1899).

♂. Head and thorax bright rufous mixed with black, some white scales on vertex of head and in dorsal crests, the tegulæ edged with white; palpi yellowish and black; legs blackish, the tarsi with ochreous rings, the fore legs rufous above; abdomen ochreous. Fore wing rufous, thickly irrorated and in places suffused with black, the veins streaked with ochreous; a double black subbasal line from costa to submedian fold filled in with greyish, with an oblique striga beyond it across cell; a double antemedial line filled in with rufous, angled outwards below costa and above inner margin; claviform well-developed, defined by black; orbicular and reniform blackish, with ochreous annuli defined by black, the former rather oblique and elliptical; a waved oblique line from lower angle of cell to inner margin; a double minutely waved postmedial line, bent outwards below costa, excurved to vein 4, then incurved; the terminal area suffused with black, with ochreous subterminal line angled outwards at vein 7, then curved; cilia ochreous and fuscous. Hind wing yellowish, the veins and termen tinged with fuscous, a dark terminal line except towards tornus; the underside with the costal area irrorated with fuscous, a dark discoidal lunule and sinuous postmedial line.

Hab. Hawaii, Kilauea, 1 ♂ type. *Exp.* 48 millim.

711. Agrotis sexstrigata.

Noctua sexstrigata, Haw. Lep. Brit. p. 228 (1809).
Noctua umbrosa, Hübn. Eur. Schmett., Noct. ff. 456, 457 (1827); Godt. Lép. Fr. v. p. 201, pl. 63. f. 3; Staud. Cat. Lep. pal. p. 140.

Head and thorax red-brown; palpi purplish red, pale at tips; tegulæ with slight dark medial line; tarsi with pale rings; abdomen ochreous, the anal tuft and ventral surface purplish red. Fore wing pale rufous with darker irroration; the veins with dark streaks; a fine dark subbasal line from costa to median nervure; a dark antemedial line oblique from costa to submedian fold, then somewhat waved; the claviform represented by a dark point at its extremity; orbicular and reniform defined by brown, the former round, a diffused medial shade passing between them, angled outwards at lower angle of cell; the postmedial line produced to slight points at the veins, slightly bent outwards below costa and oblique below vein 4; the subterminal line defined by rufous suffusion on inner side, angled outwards at vein 7 and excurved at middle; a fine dark terminal line. Hind wing ochreous, the terminal area suffused with fuscous brown, wholly suffused in female; cilia pale yellow, often tinged with pink; the underside with the costal area suffused with purplish red, a sinuous postmedial line.

Hab. Britain, Scotland, England, Leech Coll.; France, Sand Coll.; Holland, Frey Coll.; Germany, Zeller & Frey Colls.; Italy; Scandinavia. *Exp.* 38 millim.

Larva. Meyr. Brit. Lep. p. 102; Barrett, Lep. Brit. iv. p. 92, pl. 147. f. 3.
Pale ochreous or brownish, with dark striæ; dorsal line ochreous

white, edged with dark brown; subdorsal line ochreous white, edged above by a series of blackish dashes or wedges; spiracular line dark brown; head pale brown with darker markings. Food-plants: *Rubus*, *Rumex*, *Plantago*, etc. 8–5.

712. Agrotis rosaria. (Plate LXX. fig. 22.)

Agrotis rosaria, Grote, Bull. Geol. Surv. iv. p. 172 (1878); Smith, Cat. Noct. N. Am. p. 73.

♂. Head and thorax bright rufous, some of the scales tipped with grey; sides of palpi and frons blackish, the former pale at tips; tarsi with pale rings; abdomen brownish grey, the hair at sides rufous, the anal tuft yellow. Fore wing ochreous suffused with purplish rufous; an indistinct waved subbasal line from costa to submedian fold; a double obliquely waved antemedial line excurved above inner margin; claviform represented by a dark point at its extremity; orbicular and reniform ochreous, with greyish annuli and black outline, the former round; the cell between the stigmata dark brown diffused to costa; a medial shade from cell to inner margin; the postmedial line double, very even and only minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line pale, slightly angled outwards at vein 7 and excurved at middle; a fine dark terminal line. Hind wing ochreous white suffused with fuscous, especially towards costa and termen; the cilia ochreous; the type with the terminal area and cilia tinged with purplish red; the underside with dark discoidal spot and curved postmedial line.

Hab. Canada, Br. Columbia; U.S.A., California, 1 ♂ type, San Francisco (*Stretch*), 3 ♂. *Exp.* 34 millim.

*713. Agrotis obuncula. (Plate LXXV. fig. 1.)

Agrotis obuncula, Püng. ined.

♂. Head and thorax red-brown mixed with grey; palpi black-brown at sides except at extremity; abdomen fuscous grey, the anal tuft pale rufous. Fore wing pale rufous tinged with grey and with slight dark irroration; subbasal line represented by a dark striga from costa, with a grey and black point beyond it in cell; antemedial line indistinct, oblique, waved; claviform small, grey, slightly defined by black at extremity; orbicular and reniform whitish defined by black, their centres irrorated with brown, the former round, some black suffusion in lower part of cell before and between them; medial shade very indistinct, oblique, from lower angle of cell to inner margin; postmedial line indistinct, defined by grey on outer side, minutely dentate and produced to points on the veins, bent outwards below costa and incurved below vein 4; subterminal line pale, defined by brownish suffusion on inner side, slightly angled outwards at vein 7 and excurved at middle; a terminal series of dark points; a pale line at base of cilia; the apex

produced and acute, and the termen slightly angled at vein 3. Hind wing fuscous brown; the cilia pale with a brown line through them; the underside whitish irrorated with fuscous, a dark discoidal spot and sinuous postmedial line.

♀. Browner and less red.

Hab. E. Turkestan, mountains north of Khola, type † ♂ ♀ in Coll. Püngeler. *Exp.* 40 millim.

714. Agrotis calgary. (Plate LXX. fig. 23.)

Noctua calgary, Smith, J. N. Y. Ent. Soc. vi. p. 101 (1898).

Head and thorax red-brown, some of the hairs tipped with grey; palpi blackish, pale at tips; abdomen pale rufous. Fore wing with the apex rectangular, the termen very slightly angled at vein 3; red-brown with a greyish tinge; the lines double; the subbasal line minutely waved; the antemedial line minutely waved, strongly angled outwards above inner margin; claviform represented by a dark point at its extremity; orbicular and reniform with grey-irrorated centres defined by black, the former rounded; a distinct medial shade, the cell between the stigmata sometimes dark or black; the postmedial line minutely waved, bent outwards below costa, slightly angled inwards in discal fold, incurved below vein 4; post-medial area darker, with some pale points on costa; the subterminal line pale, slightly angled outwards at vein 7 and excurved at middle; a fine dark terminal line. Hind wing pale reddish ochreous tinged with fuscous; a dark postmedial line; a terminal line; cilia purplish red; the underside with dark discoidal spot.

Hab. Canada, Calgary (*Dod*), 3 ♂, 1 ♀. *Exp.* 38 millim.

*715. Agrotis plebeia. (Plate LXX. fig. 24.)

Noctua plebeia, Smith, J. N. Y. Ent. Soc. vi. p. 105 (1898).

Dirty clay-yellow irrorated with blackish; tegulæ paler at tips; thorax rather dark. Fore wing with the markings traceable, incomplete; subbasal line double, black, from costa to vein 1; ante-medial line double, black, interrupted, slightly excurved; claviform brown defined by black and brown; orbicular and reniform with black centres and pale annuli defined by brown, the former elliptical, the latter large; a diffused medial shade; postmedial line blackish, double, diffused, very even, bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by a series of black spots with some yellowish scales on outer side, slightly angled outwards at vein 7 and excurved at middle; a terminal series of brown lunules, and a yellowish line at base of cilia. Hind wing fuscous, paler towards base; cilia pale; the underside with dark irroration, a large discoidal spot and broad postmedial line.

Hab. Canada, Br. Columbia, Livingston, Vancouver; U.S.A., Washington, Oregon, California. *Exp.* 35–40 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

716. Agrotis mandarinella. (Plate LXX. fig. 25.)

Graphiphora mandarina, Leech, Trans. Ent. Soc. 1900, p. 42 (nec p. 36).

Head and thorax bright rufous slightly mixed with grey; palpi rufous and blackish, pale at tips; tibiæ and tarsi blackish, ringed with white; abdomen grey-brown, the anal tuft and ventral surface reddish ochreous. Fore wing bright rufous suffused with purplish; a double black subbasal line from costa to submedian fold, excurved below costa and with a point beyond it in cell; a double, waved, antemedial line angled outwards below costa and more strongly above inner margin; claviform small, slightly defined by ochreous and brown; orbicular and reniform with rufous centres and ochreous annuli defined by rufous, the former small, round; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale, defined on inner side towards costa by a dark shade with pale points on it, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pale fuscous brown; the cilia pale purplish red; the underside pale purplish red, the costal area irrorated with black, a small discoidal lunule and sinuous postmedial line.

Hab. W. China, Pu-tsu-fang, 1 ♂ type, Ni-tou, 1 ♀; Tibet, Yatung (*Hobson*), 1 ♂. *Exp.* 36 millim.

717. Agrotis jucunda. (Plate LXX. fig. 26.)

Graphiphora jucunda, Wlk. x. 399 (1856); Smith. Cat. Noct. N. Am. p. 72.
Agrotis perconflua, Grote, Ann. Lyc. Nat. Hist. N. Y. xi. p. 304 (1876).
Agrotis eriensis, Grote, Bull. Geol. Surv. iv. p. 172 (1878).

Head ochreous white tinged with rufous; palpi blackish except at extremities; thorax rufous; pectus and legs purplish rufous, the tarsi fuscous ringed with white; abdomen brownish ochreous. Fore wing greyish ochreous, more or less completely suffused with purplish red; a waved black subbasal line from costa to submedian fold; a black point in cell; an indistinct double, waved, antemedial line excurved above inner margin; claviform represented by a black point; orbicular and reniform with rufous centres, greyish annuli, and black outlines, the former rounded, usually complete, the latter somewhat constricted at middle, the cell before them and between their lower portions usually black; an indistinct double dentate postmedial line, usually forming grey and black points at the veins, bent outwards below costa, excurved to vein 4, then incurved; a greyish subterminal line excurved at vein 7 and middle, and usually with series of small dentate black marks or points on its inner edge; a terminal series of black points. Hind wing ochreous white, suffused with brown especially towards termen; the underside with discoidal point and indistinct curved postmedial line.

Ab. 1. *perconflua*. Fore wing without the black in the cell.

Hab. Canada, Anticosti I., 3 ♂, Orilla (*Bush*), 1 ♀ type; U.S.A., Northern and Eastern States, Maine, Orono, 1 ♂, New York, Schenectady (*Lintner*), 1 ♀ type *perconflua*, Evans Centre (*Grote*), 1 ♂, 1 ♀, type *eriensis*. *Exp.* 38–40 millim.

718. Agrotis rubi.

Noctua rubi, View. Tab. Verz. p. 57, pl. 3. f. 5 (1790); Staud. Cat. Lep. pal. p. 140.
Noctua radica, Esp. Schmett. iv. pl. 151. f. 4 (1796).
Noctua bella, Bork. Eur. Schmett. iv. p. 605 (1792); Godt. Lép. Fr. ii. p. 199, pl. 63. f. 2; Boisd. Icones, pl. 83. f. 5; Herr.-Schäff. Eur. Schmett., Noct. f. 81.
Noctua quadratum, Hübn. Schmett. Eur., Noct. f. 477 (1827).
Caradrina posticata, Wlk. xv. 1695 (1858).
Noctua florida, Schmidt, Stett. ent. Zeit. 1859, p. 46; Herr.-Schäff. Neue Schmett. f. 74; Staud. Cat. Lep. pal. p. 140.

Head and thorax red-brown; palpi dark red-brown, pale at tips; tibiæ and tarsi blackish with pale rings. Fore wing red-brown with a purplish tinge; a double slightly waved subbasal line from costa to submedian fold; a double, waved, antemedial line; claviform greyish, with a black point at its extremity; orbicular and reniform with greyish annuli defined by black, the former round, the cell between them dark brown; a diffused medial shade angled outwards to lower angle of cell; the postmedial line double, minutely waved, and produced to slight points on the veins, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line greyish, slightly angled outwards at vein 7 and excurved at middle; a terminal series of small dark lunules. Hind wing ochreous suffused with fuscous brown; the cilia ochreous or pinkish; the underside ochreous irrorated with fuscous, a small discoidal spot and indistinct curved postmedial line.

Ab. 1. *florida*. Deeper and brighter rufous, the markings of fore wing more prominent.

Hab. Britain, Scotland, England, Leech Coll.; France; Germany, Zeller, Frey, & Leech Colls.; Austria, Leech Coll., type ♂ *posticata*, hab. ign.; Scandinavia; Russia, Livonia, Urals; Siberia; W. Turkestan, Ferghana; Kamschatka. *Exp.* 30–38 millim.

Larva. Meyr. Brit. Lep. p. 102; Barrett, Lep. Brit. iv. p. 89, pl. 147. f. 2. Greyish-ochreous, grey, or brown; dorsal and subdorsal lines pale with dark edges; subspiracular line prominently pale; head brown with dark markings. Food-plants: grasses, *Rumex*, *Taraxacum*, etc. 6–7, 9–3.

719. Agrotis xanthographa.

Noctua xanthographa, Schiff. Wien. Verz. p. 83 (1776); Fabr. Mant. Ins. ii. p. 170; Hübn. Eur. Schmett., Noct. f. 138; Dup. Lép. Fr. iii. p. 107, pl. 80. f. 2; Steph. Ill. Brit. Ent., Haust. ii. p. 153; Staud. Cat. Lep. pal. p. 140.
Noctua tetragona, Haw. Lep. Brit. p. 205 (1809).
Noctua budensis, Frr. Beitr. Schmett. pl. 232. f. 1 (1839).
Agrotis cohæsa, Herr.-Schäff. Eur. Schmett. ii. p. 209, Noct. ff. 95–7 (1845).
Agrotis elutior, Alph. Stett. ent. Zeit. 1887, p. 168; id. Rom. Mém. v. p. 129, pl. 6. f. 3.
Agrotis palæstinensis, Kalchb. Iris, x. p. 168 (1897).

Head, thorax, and fore wing red-brown, sometimes suffused with fuscous, or varying to ochreous or grey irrorated with fuscous; palpi

blackish at sides except at tips; abdomen pale brownish ochreous or fuscous, the anal tuft more rufous. Fore wing with slight curved subbasal line from costa to submedian fold; the antemedial line rather indistinct, waved, and angled inwards to points on the veins; claviform absent; orbicular and reniform with whitish annuli defined by blackish, the latter sometimes filled in with whitish, the former round; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale, defined by fuscous on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of dark points; a fine pale line at base of cilia. Hind wing ochreous white; the terminal area suffused with fuscous, in female suffused to middle or base; the underside paler, the costal area irrorated with brown, a sinuous postmedial line usually present.

Ab. 1. Suffused with fuscous.—Scotland, Forres.

Ab. 2. *elutior*. Cinnamon or greyish ochreous.

Ab. 3. *budensis*. Greyish.

Ab. 4. *palæstinensis*. Pale grey, with the markings distinct.

Hab. Britain, Scotland, England, Leech Coll.; France, Sand Coll.; Germany, Zeller Coll.; Hungary (*Staudinger*); Switzerland; Sicily; Russia, Livonia, Zeller Coll.; Armenia; Asia Minor; Syria; W. Turkestan, Ferghana. *Exp.* 32–40 millim.

Larva. Meyr. Brit. Lep. p. 101; Barrett, Lep. Brit. iv. p. 97, pl. 148. f. 1.

Pale brownish ochreous, sometimes with a reddish tinge; dorsal line pale, dark-edged; subdorsal line pale, dark-edged below, and with a series of black marks above it, nearly obsolete on somites 1–3; spiracular line brown; head ochreous with brown markings. Food-plants: *Rumex*, *Plantago*, etc. 9–5.

720. Agrotis rubifera. (Plate LXX. fig. 27.)

Agrotis rubifera, Grote, Can. Ent. vii. pp. 207 227; Smith, Cat. Noct. N. Am. p. 73.

Head, thorax, and fore wing varying from dark dull brown to purple-brown and bright chestnut-red; palpi blackish except at extremity; abdomen fuscous, with the hair at sides and extremity rufous. Fore wing irrorated with black; a waved black subbasal line from costa to submedian fold; a black point in cell; a double waved antemedial line excurved above inner margin; the extremity of claviform usually defined by a black point; the orbicular and reniform tinged with fuscous, with grey annuli and blackish outlines, the former large, round, the latter constricted at middle and with its lower edge produced inwards on median nervure; the postmedial line double, very even and only minutely dentate, with series of dark points on its outer edge, bent outwards below costa, excurved to vein 4, then incurved; a pale subterminal line with minutely dentate dark inner edge, angled slightly outwards at vein 7 and excurved at middle; a terminal series of dark points. Hind wing ochreous grey suffused with fuscous, the cilia pale ochreous; the underside with dark discoidal lunule and sinuous postmedial line.

Ab. 1. The type is a female with the cell black before and between the stigmata.

Hab. CANADA (*Norman*), 1 ♂, Renfrew Co., 1 ♀, New Brunswick, Woodstock, 1 ♀; U.S.A., Northern and Eastern States, 2 ♂, 2 ♀, type, Wisconsin, 1 ♂. *Exp.* 32–38 millim.

721. Agrotis phyllophora. (Plate LXX. fig. 28.)

Agrotis phyllophora, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 61 (1874); Smith, Cat. Noct. N. Am. p. 72.

Head and thorax chestnut, on thorax mixed with purplish grey; palpi pale at tips; tarsi dark brown, with pale rings; abdomen dull brown, with the hair at sides rufous. Fore wing purplish grey largely suffused with chestnut; a double sinuous subbasal line from costa to vein 1; a double obliquely waved antemedial line; orbicular and reniform with pale annuli and rufous centres, the former round, complete, the latter with some fuscous in its lower extremity; the waved rufous medial shade passing between them; the postmedial line double, minutely dentate, and with a series of black and grey points on its outer edge, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line excurved at vein 7 and middle, and defined by a chestnut shade on its inner edge; a terminal punctiform line. Hind wing ochreous suffused with fuscous brown; the cilia reddish; the underside with discoidal point and curved postmedial line.

Hab. CANADA, 1 ♀; U.S.A., Northern, Middle, and Eastern States, 1 ♂, 1 ♀, type, New York, Albany (*Bailey*), 1 ♀. *Exp.* 40–46 millim.

722. Agrotis nivisparsa.

Chersotis nivisparsa, Butl. Ill. Het. B. M. vii. p. 54, pl. 127. f. 11 (1889); Hmpsn. Moths Ind. ii. p. 187.

Head and thorax grey-brown mixed with grey and black; tarsi black, with pale rings; abdomen grey-brown with an ochreous tinge, the ventral surface grey. Fore wing grey or grey-brown irrorated with black; a double, waved, subbasal black line from costa to submedian fold; a double, waved, antemedial line; claviform moderate, blackish; orbicular and reniform grey defined by black, their centres irrorated with fuscous, the former round, the area before and between them and beyond the reniform suffused with black; an indistinct waved line from lower angle of cell to inner margin; the postmedial line double, dentate, bent outwards below costa, excurved to vein 4, then incurved and angled outwards on vein 1; the subterminal line whitish, defined by obscure dentate fuscous marks on inner side and some fuscous suffusion on outer, minutely waved or punctiform, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules. Hind wing fuscous brown; the cilia with a pale line at base; the

underside pale irrorated with brown, a dark discoidal spot, curved postmedial line, and diffused subterminal band.

Hab. Kashmir, Goorais Valley (*Leech*), 2 ♂, 2 ♀, Rala (*McArthur*), 1 ♂; Punjab, Murree (*Harford*), 1 ♀, Abbottabad, 1 ♀, Dharmsála (*Hocking*), 1 ♀ type. *Exp.*, ♂ 36, ♀ 40 millim.

723. Agrotis nebula. (Plate LXX. fig. 29.)

Graphiphora nebula, Leech, Trans. Ent. Soc. 1900, p. 43.

♀. Head and thorax grey slightly tinged with brown; palpi black-brown except at tips; abdomen grey-brown. Fore wing slightly irrorated with black; an indistinct double, waved, subbasal line from costa to submedian fold, with a point beyond it in cell; a rather indistinct double, obliquely waved, antemedial line; claviform represented by a dark point at its extremity; orbicular and reniform large, defined by brown, the former round, rather incomplete, the latter with fuscous centre and grey annulus; a waved dark medial shade angled outwards to lower angle of cell; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line angled outwards at vein 7 and excurved at middle, slightly defined by brown on inner side, developed into somewhat dentate marks at discal and submedian folds, and into a large patch towards costa with pale points on it; a terminal series of black points. Hind wing fuscous brown; cilia greyish at tips; the underside grey, the costal area irrorated with fuscous, a black discoidal lunule and sinuous postmedial line.

Hab. W. China, Omei-shan, 1 ♀, Ni-tou, 1 ♀, Ta-chien-lu (*Pratt*), 1 ♀, Wa-ssu-kou, 2 ♀ type. *Exp.* 40–48 millim.

724. Agrotis flavibrunnea. (Plate LXX. fig. 30.)

Graphiphora flavibrunnea, Leech, Trans. Ent. Soc. 1900, p. 40.

Head and thorax yellow-brown; palpi deep red mixed with black, pale at tips; pectus and legs purplish red; abdomen fuscous brown, the anal tuft and ventral surface rufous. Fore wing yellow-brown, tinged with rufous and with dark irroration, the inner and terminal areas more or less tinged with purplish; an indistinct waved subbasal line from costa to submedian fold; an indistinct double oblique irregularly waved antemedial line, more strongly angled outwards below costa and above inner margin; claviform small, indistinct, with a black point at its extremity; orbicular and reniform indistinctly defined by blackish, the former round, a curved medial shade passing between them; the postmedial line indistinct, dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line defined by somewhat darker suffusion beyond it, slightly angled outwards at vein 7 and excurved at middle; a terminal series of dark points. Hind wing fuscous brown; the cilia rufous; the underside pale reddish, the costal and

terminal areas irrorated with fuscous, a discoidal lunule and sinuous postmedial line.

Hab. W. China, Ti-chien-lu (*Pratt*), 1 ♀, Chia-kou-ho, 1 ♂ type, Moupin (*Kricheldorff*), 2 ♂, 2 ♀. *Exp.* 44–48 millim.

725. Agrotis dahli.

Noctua dahlii, Hübn. Eur. Schmett., Noct. ff. 465, 466 (1827); Godt. Lép. Fr. ii. p. 189, pl. 62. f. 1; Staud. Cat. Lep. pal. p. 140.
Agrotis descripta, auct. (nec Brem.), Hmpsn. Moths Ind. ii. p. 184; Staud. Cat. Lep. pal. p. 140.
Graphiphora canescens, Butl. Ill. Het. B. M. ii. p. 28, pl. 30. f. 1 (1878).
Orthosia erubescens, Butl. A. M. N. H. (5) v. p. 224 (1880).
Cerastis subdolens, Butl. Trans. Ent. Soc. 1881, p. 181 (♂).
Chera efflorescens, Hmpsn. Ill. Het. B. M. viii. p. 78, pl. 145. f. 7 (1891).
Chera erubescens, Hmpsn. Ill. Het. B. M. viii. p. 78, pl. 145. f. 14 (1891).

♂. Head and thorax red-brown; palpi purplish red, grey at tips; tibiæ and tarsi dark brown irrorated with white; abdomen grey-brown, the anal tuft and ventral surface rufous. Fore wing yellow-brown; the subbasal line double, waved, from costa to submedian fold, and filled in with purplish; the antemedial line similar, extending to inner margin; the claviform represented by a black point at its extremity; orbicular and reniform with slight greyish annuli defined by brown, the former round, the latter with some greyish at centre; a waved diffused medial line angled outwards on median nervure; the postmedial line double, dentate, and produced to points on the veins, bent outwards below costa, slightly incurved at discal fold, incurved below vein 4, some purplish suffusion beyond it; the subterminal line greyish, angled outwards at vein 7 and excurved at middle, the area beyond it suffused with purplish; a terminal series of dark points. Hind wing brownish ochreous, suffused with fuscous brown on terminal half; cilia rufous; underside pale, the costal area tinged with rufous and the costal and terminal areas irrorated with fuscous, a discoidal spot and sinuous postmedial line.

♀. Head and thorax purple-red irrorated with grey; fore wing purple-brown, often with the reniform prominently grey; hind wing fuscous brown.

Ab. 1. *nana*. Hardly more than half the size of typical form.—Daurla.

Ab. 2. *efflorescens*. Head, thorax, and fore wing much greyer; palpi blackish except at tips.

Hab. Britain, Zeller & Leech Colls.; France, Sand Coll.; Germany, Zeller Coll.; Russia, S.E.; W. Siberia, Altai; W. Turkestan, Issyk-kul; E. Turkestan, Ili; Tibet, Amdo; E. Siberia, Zeller Coll., 1 ♂; Amurland, 8 ♂, 6 ♀, Leech Coll., Ussuri; Japan, Tokio (*Maries*), 2 ♂ type *subdolens*, Hakodaté (*Andrewes*), 1 ♂, Kiushiu, 1 ♀, Gifu (*Pryer*), 1 ♂, Yokohama (*Pryer*), 1 ♂, 6 ♀, (*Jonas*) 1 ♀ type *canescens*; Corea, Gensan (*Ito*), 1 ♀; W. China, Kiukiang (*Pratt*), 3 ♂, 2 ♀, Ta-chien-lu (*Pratt*), 1 ♀, Pu-tsu-fang, 1 ♂, Chia-kou-ho (*Pratt*), 2 ♀; Punjab, Thundiani (*Yerbury*), 2 ♂,

2 ♀, Dharmsála (*Hocking*), 5 ♂, 3 ♀; Nilgiris (*Swinhoe*, *Hampson*), 2 ♂, 7 ♀, types *erubescens*, Butl., *erubescens*, Hmpsn., and *efflorescens*; Up. Burma, Byingyi (*Bingham*), 1 ♂. *Exp.* 32–46 millim.

Larva. Meyr. Brit. Lep. p. 103; Barrett, Lep. Brit. iv. p. 66, pl. 144. f. 1.

Greenish ochreous to dull green; dorsal area whitish ochreous to deep brown; dorsal line pale, dark-edged, interrupted, traversing a series of darker diamond-shaped marks; subdorsal line pale, edged above by a series of short black streaks; subspiracular line pale; head pale brown; thoracic plate dark brown. Food-plants: *Rumex*, *Primula*, *Plantago*, etc. 9–5.

726. Agrotis tarda. (Plate LXX. fig. 31.)

Noctua tarda, Leech, P. Z. S. 1889, p. 495, pl. 50. f. 4.

♀. Head and thorax greyish tinged with rufous; palpi blackish, pale at tips; tibiæ and tarsi blackish with pale rings; abdomen fuscous brown, the anal tuft and ventral surface ochreous, the latter irrorated with black. Fore wing fuscous suffused with purplish grey; a double black subbasal line from costa to vein 1, its outer edge diffused; a double oblique waved black antemedial line with black patch before it above vein 1; claviform small, rufous defined by black; orbicular and reniform pale rufous defined by black and their centres by brown, the former oblique, elliptical, the cell between them black; a slight medial shade angled outwards to lower angle of cell; the postmedial line double, dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line defined by black suffusion before it on costal area, then nearly obsolete, slightly angled outwards at vein 7 and excurved at middle; a terminal series of slight points. Hind wing fuscous brown, the cilia pale with a brown line near base; the underside pale tinged with purplish, a dark discoidal lunule and sinuous postmedial line.

Hab. Japan, Hakodaté (*Leech*), 1 ♀ type. *Exp.* 40 millim.

727. Agrotis cinctipennis. (Plate LXX. fig. 32.)

Apamea cinctipennis, Butl. A. M. N. H. (5) vii. p. 323 (1881).

♀. Head and thorax red-brown mixed with black and some grey; tarsi with pale rings; abdomen ochreous, dorsally suffused with fuscous and with lateral series of black spots. Fore wing purplish red, thickly irrorated and striated with black; a double, waved, subbasal line from costa to submedian fold; a double, waved, antemedial line; claviform small defined by black; orbicular and reniform purplish fuscous defined by black, the former somewhat oblique, elliptical, open above, in one specimen the orbicular and reniform are white, the latter with rufous and fuscous centre; an indistinct waved line from lower angle of cell to inner margin; the postmedial line rather indistinct, dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line

defined by dark suffusion on inner side and the area beyond it ochreous suffused with rufous, angled outwards at vein 7 and excurved at middle; some pale points on costa towards apex and a terminal series of dark points. Hind wing fuscous brown; the cilia ochreous with a brown line through them; the underside with the costal area ochreous irrorated with fuscous, a slight discoidal spot, sinuous postmedial line, and traces of subterminal line.

Hab. Hawaii (*Blackburn*), 1 ♀ type, Olaa, 1 ♀, Oahu, Mt. Waimea (*Perkins*), 1 ♀. *Exp.* 44 millim.

728. Agrotis selenias. (Plate LXXI. fig. 1.)

Agrotis selenias, Meyr. Faun. Hawaiiensis, i. p. 150 (1899).

Head and thorax rufous or purplish red, mixed with some black and white scales; palpi with black patch on 2nd joint, frons with lateral black bar, patagia with black streak above; tarsi black with ochreous rings; abdomen grey-brown, the ventral surface pinkish, the anal tuft ochreous. Fore wing purplish red or purple irrorated with black; a double, waved, black subbasal line from costa to submedian fold; a double, waved, oblique antemedial line, angled outwards below costa; claviform defined by black; orbicular and reniform defined by black, the former round, the latter with yellowish-white lunule on its outer edge; an indistinct oblique waved line from lower angle of cell to inner margin; the postmedial line dentate, bent outwards below costa, slightly angled inwards in discal fold and oblique below vein 4; some pale points on costa towards apex; the subterminal line pale, defined by obscure dentate blackish marks on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing fuscous brown with an ochreous tinge; cilia whitish with a brown line at base; the underside whitish, the costal area tinged with purplish and irrorated with black, a dark discoidal spot, sinuous postmedial line, and diffused subterminal line.

Hab. Hawaii, Mt. Waimea (*Perkins*), 1 ♂, 3 ♀, type, Kauai, 1 ♂, 1 ♀. *Exp.* 46–50 millim.

729. Agrotis chersotoides. (Plate LXXI. fig. 2.)

Apamea chersotoides, Butl. A. M. N. H. (5) vii. p. 322 (1881).

♂. Head and thorax purplish red mixed with black and grey; tarsi blackish with pale rings; abdomen fuscous grey, the anal tuft and ventral surface fulvous; a sublateral series of black points. Fore wing purplish red slightly irrorated with black, the basal, and costal area to postmedial line, with some whitish; a double, waved, black subbasal line from costa to submedian fold; a double, waved, antemedial line; claviform small, defined by black; orbicular and reniform with brown centres and whitish annuli defined by black, the former small, oblique, elliptical, the latter with some fuscous on its lower part, the cell before and between them suffused with black; an oblique waved line from lower angle of cell to inner

margin and black point on costa; the postmedial line minutely dentate, with double black striæ at costa, bent outwards below costa, excurved to vein 4, then incurved, some pale points on costa towards apex; the subterminal line represented by a series of ochreous points with small obscure dentate blackish marks before them, the area beyond them darker except at apex, which is pale; a terminal series of small black lunules. Hind wing fuscous brown, the cilia ochreous, with a brown line through them; the underside whitish, the costal and terminal areas tinged with ochreous and irrorated with fuscous, a discoidal lunule and waved postmedial line.

♀. Thorax and fore wing rather browner.

Hab. Hawaii (*Blackburn*), 1 ♂, 1 ♀, type. *Exp.* 34–36 millim.

730. Agrotis coniotis, n. n. (Plate LXXI. fig. 3.)

Agrotis chersotoides, Meyr. Faun. Hawaiiensis, i. p. 151 (nec Butl.).

Head and thorax blackish, the dorsal crests grey; tarsi black with pale rings; abdomen grey-brown. Fore wing pale grey-brown, irrorated and striated with fuscous, the costal area to subterminal line, the cell and area just below it to antemedial line suffused with black; a double, waved, subdorsal black line from costa to submedian fold; a double, waved, black antemedial line; claviform small, obscurely defined by black; orbicular and reniform black, with slight greyish annuli defined by black, the former nearly round; a slight oblique waved line from lower angle of cell to inner margin; the postmedial line more or less indistinct, dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line pale, defined by a dark patch on inner side at costa, a little fuscous at middle and the area beyond it darker except at apex which is pale, angled outwards at vein 7 and excurved at middle; a terminal series of minute black lunules. Hind wing pale brownish, the veins, costal and terminal areas darker; cilia pale, with a brown line through them; the underside whitish, the costal area irrorated with brown, a slight discoidal spot and curved postmedial line with dark striæ on the veins.

Ab. 1. Head and thorax browner; fore wing without the black suffusion on costal area, the orbicular whitish.

Ab. 2. Head and thorax red-brown; fore wing red-brown tinged with fuscous on costal area.

Hab. Hawaii, Kona (*Perkins*), 1 ♂, 1 ♀, type, Kauai, Mt. Waimea (*Perkins*), 3 ♀. *Exp.* 36–40 millim.

731. Agrotis rubicilia.

Graphiphora rubicilia, Moore, P. Z. S. 1867, p. 55; Hmpsn. Moths Ind. ii. p. 185.

Graphiphora nigrosigna, Moore, P. Z. S. 1881, p. 352, pl. 38. f. 4.

Head and thorax olive-yellow and rufous to bright rufous; palpi except at tips and hair of pectus purplish red; tibiæ and tarsi

blackish; abdomen greyish or ochreous, the anal tuft and ventral surface rufous. Fore wing pale rufous suffused with yellow except the terminal area from apex to middle of inner margin, or purplish with some olive suffusion from middle of costa to subterminal line and extending to lower angle of cell; an indistinct waved, double, subbasal line from costa to submedian fold; a double, waved, antemedial line; claviform represented by a fuscous point at its extremity; orbicular and reniform indistinctly defined by brown, the former round; an indistinct waved medial line angled outwards to lower angle of cell; the postmedial line double, dentate, and produced to points on the veins, bent outwards below costa, slightly incurved at discal fold and incurved below vein 4; the subterminal line greyish, angled outwards at vein 7 and excurved at middle; a terminal series of points. Hind wing fuscous brown; the cilia purplish red; the underside pale reddish, the costal area deeper red, and the costal and terminal areas irrorated with brown, a slight discoidal spot and sinuous postmedial line.

This may be a variety of *A. dahli*.

Hab. Japan, Hakodatè (*Leech*, *Andrewes*), 1 ♂, 1 ♀, Oiwake (*Pryer*), 1 ♀, Kiushiu, 1 ♀, Yokohama (*Pryer*), 3 ♂, 3 ♀; W. China, Chou-pin-sa, 1 ♂, Washan, 1 ♀; Kashmir, Narkundah (*McArthur*), 1 ♀; Punjab, Sultanpur (*G. Young*), 2 ♂, Dalhousie (*Harford*), 1 ♀, Dharmsála (*Hocking*), 5 ♂, 5 ♀; Sikhim (*Lidderdale*, *Dudgeon*), 2 ♂, 2 ♀, type. *Exp.* 32–40 millim.

732. Agrotis basistriga. (Plate LXXI. fig. 4.)

Graphiphora basistriga, Moore, P. Z. S. 1867, p. 54; Hmpsn. Moths Ind. ii. p. 184.

Head and thorax purplish grey suffused with deep red-brown or entirely red-brown; palpi deep red-brown, pale at tips; tibiæ and tarsi blackish irrorated with white; abdomen pale red-brown, the anal tuft and ventral surface purplish red. Fore wing deep rufous and olive-fuscous, more or less completely suffused with purple-grey, some dark suffusion above basal part of vein 1 and on medial part of inner margin; a double, waved, subbasal line from costa to vein 1, with a dark point in the cell beyond it; a double, waved, antemedial line strongly angled outwards above inner margin; claviform small, defined by brown; orbicular and reniform defined by brown, and with their centres defined by brown; an indistinct waved medial line angled outwards on median nervure; a double postmedial line, dentate and produced to points on the veins, bent outwards below costa, slightly angled inwards at discal fold, incurved below vein 4; a double subterminal line, angled outwards at vein 7 and excurved at middle, and with some olive-brown suffusion before it at costa; some pale points on costa towards apex; a terminal series of dark points. Hind wing yellowish white, the terminal area suffused with fuscous or fuscous brown; cilia pale purplish red; the underside paler, the costal area suffused with purplish red; a dark discoidal lunule and sinuous postmedial line.

Hab. W. China, Nitou, 1 ♀, Ta-chien-lu (*Pratt*), 1 ♀; Dharmsála (*Hocking*), 1 ♂, 1 ♀; Tibet, Yatung (*Hobson*), 1 ♀; Sikhim (*Lidderdale*), 3 ♂, 3 ♀, type. *Exp.* 38–42 millim.

733. Agrotis glottuloides. (Plate LXXI. fig. 5.)

Apamea glottuloides, Butl. Trans. Ent. Soc. 1882, p. 120.

Head and thorax fuscous black; palpi whitish at tips; antennæ whitish; fore tibiæ and tarsi whitish; mid and hind tibiæ with the spurs ringed with white, the tarsi whitish; abdomen fuscous, the ventral surface grey irrorated with black. Fore wing fuscous black, the inner area mostly grey to near termen, a streak of black and grey scales in basal half of submedian fold; an indistinct waved dark antemedial line; orbicular and reniform incompletely outlined with white and black scales, the former elliptical, the latter sometimes with whitish spot; the postmedial line indistinct, dentate, bent outwards below costa, somewhat angled inwards in discal fold and incurved below vein 4; a subterminal series of slight black and white points. Hind wing nacreous white, the veins and terminal area tinged with fuscous; a fuscous line at base of cilia; the underside whiter, the costal area irrorated with black, a black discoidal spot and postmedial series of points on the veins.

Hab. Chili (*Edmonds*), 1 ♂, 1 ♀, type. *Exp.* 40 millim.

*734. Agrotis cynica. (Plate LXXI. fig. 6.)

Noctua cynica, Smith, J. N. York Ent. Soc. vi. p. 101 (1898).

Head and thorax red-brown, some of the hairs tipped with grey; palpi black, grey at tips; abdomen grey-brown, the anal tuft ochreous, the ventral surface reddish. Fore wing broad, reddish brown tinged with grey; the lines double; the subbasal line minutely waved; the antemedial line minutely waved, angled outwards above inner margin; claviform represented by a black point at its extremity; orbicular and reniform with brown centres and grey annuli slightly defined by fuscous, the former elliptical, oblique; no medial line; postmedial line minutely waved, slightly bent outwards below costa, excurved to vein 4, then incurved, the costa dark with pale points beyond it; subterminal line pale, defined on inner side by a dark patch on costal area, then by small spots, slightly angled outwards at vein 7 and excurved at middle; a terminal series of dark points; cilia ochreous with fuscous tips. Hind wing pale ochreous thickly irrorated with fuscous brown; a dark discoidal lunule and sinuous postmedial line; cilia ochreous; the underside paler with the markings more distinct.

Hab. U.S.A., New York, Albany. *Exp.* 36 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

735. Agrotis flavirena.

Graphiphora flavirena, Moore, P. Z. S. 1881, p. 352, pl. 38. f. 3.
Graphiphora vulpina, Moore, Lep. Atk. p. 118 (1882); Hmpsn. Moths Ind. ii. p. 185.

♀. Head and tegulæ red-brown, the latter with dark patches irrorated with white; thorax purple-brown, the scales tipped with white; pectus, legs, and abdomen grey-brown. Fore wing red-brown, with slight white irroration at base, below costa, and on the veins; subbasal line obsolete; antemedial line indistinct, waved; claviform represented by a dark point at its extremity; orbicular indistinctly defined by brown, round; reniform ochreous whitish defined by brown; postmedial line indistinct, minutely waved, bent outwards below costa, excurved to vein 4, then oblique; traces of some subterminal points; a fine pale line at base of cilia. Hind wing fuscous brown; the cilia pale purplish; the underside pale, the costal area and termen tinged with pink; a dark discoidal lunule and indistinct curved postmedial line.

Hab. Sikhim (*Russell*), 1 ♀ type *vulpina*. *Exp.* 46 millim.

736. Agrotis tincta. (Plate LXXI. fig. 7.)

Graphiphora tincta, Leech, Trans. Ent. Soc. 1900, p. 41.

♀. Head and thorax purple-brown; palpi deep red-brown, pale at tips; frons and shoulders suffused with grey; tibiæ and tarsi fuscous, the spurs with pale rings; abdomen fuscous brown, the anal tuft and ventral surface rufous. Fore wing red-brown suffused with purplish grey, except the end of cell and area from it to costa at subterminal line; faint traces of a subbasal line; an indistinct double antemedial line filled in with grey, angled outwards below costa, on median nervure and on vein 1 and inwards in cell and submedian fold; claviform with its extremity slightly defined by rufous; orbicular and reniform irrorated with grey and with grey annuli slightly defined by blackish, the former rounded, its lower extremity produced to a point, sometimes connected with reniform; the postmedial line very indistinct, double, even, bent outwards below costa, excurved to vein 4, then incurved, bent outwards to inner margin; the subterminal line indistinct, greyish, slightly defined by rufous on inner side, angled outwards at vein 7 and excurved at middle; traces of a terminal series of black points. Hind wing fuscous brown; the cilia purplish red; the underside pale purplish red, the costal area irrorated with fuscous brown, a small discoidal spot and sinuous postmedial line.

Hab. W. China, Omei-shan, 1 ♀ type; Punjab, Simla, 7000 feet (*Pilcher*), 1 ♀. *Exp.* 36–40 millim.

737. Agrotis griseivena. (Plate LXXI. fig. 8.)

Agrotis griseivena, Hmpsn. Moths Ind. ii. p. 187 (1894).

Head and thorax reddish brown, more or less strongly mixed with white or grey; tegulæ with white or grey medial line and

tips; abdomen grey irrorated with brown. Fore wing pale olive-brown, the veins blue-grey; the subbasal line represented by double oblique black striæ from costa and median nervure filled in with grey; a double, waved, antemedial line filled in with grey, angled outwards below costa and more strongly above inner margin; claviform large, defined by grey then black; orbicular and reniform with grey annuli defined by black, the former round or elliptical, the cell before and between them and the area just beyond the reniform more or less suffused with black; the postmedial line defined by grey on outer side, minutely dentate, bent outwards below costa, slightly angled inwards in discal fold and incurved below vein 4; the subterminal line grey, defined by dentate black marks on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules. Hind wing whitish suffused with fuscous, especially on terminal half and in female; cilia pale brown at base, whitish at tips; the underside whitish, the costal area irrorated with brown, the terminal area suffused with fuscous; a sinuous postmedial line and slight discoidal striga.

Hab. Kashmir, Barra Larcha (*McArthur*), 1 ♂, 1 ♀; Punjab, Dalhousie (*Harford*), 1 ♀ type. *Exp.* 38 millim.

738. Agrotis cerastioides. (Plate LXXI. fig. 9.)

Graphiphora cerastioides, Moore, P. Z. S. 1867, p. 54; Hmpsn. Moths Ind. ii. p. 185.
Apamea nubila, Moore, P. Z. S. 1881, p. 346, pl. 38. f. 10.

Head and thorax purplish red-brown, often tinged with grey; palpi pale at tips; tibiæ and tarsi fuscous, the spurs with pale rings; abdomen fuscous brown, the anal tuft and ventral surface rufous. Fore wing red-brown suffused with purplish grey, the costal edge rufous; an indistinct double subbasal line, angled outwards below costa; a double antemedial line, angled inwards in submedian fold and very strongly outwards above inner margin; claviform with its extremity slightly defined by brown; orbicular and reniform with greyish annuli defined by brown, the former round, the latter often with ochreous centre; the postmedial line double, even, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line greyish, angled outwards at vein 7 and excurved at middle; a terminal series of dark points; cilia rufous, with fine pale line at base. Hind wing dark brown, the cilia purplish red with fine pale line at base; the underside purplish red, with small dark discoidal lunule and sinuous postmedial line.

Hab. Punjab, Simla (*Harford*), 1 ♂, Dharmsála (*Hocking*), 1 ♂; Sikhim, 2 ♂, 1 ♀, type. *Exp.* 32–38 millim.

739. Agrotis esurialis. (Plate LXXI. fig. 10.)

Agrotis esurialis, Grote, Can. Ent. xiii. p. 131 (1881); Smith, Cat. Noct. N. Am. p. 72.

♂. Head and thorax pale brown-pink; palpi black at sides,

whitish at extremity; sides of frons black; abdomen pale brown, the hair at sides and ventral surface rufous. Fore wing pale suffused with brown-pink; a dark waved subbasal line from costa to submedian fold; a black point in cell; the antemedial line irregularly waved, oblique; the extremity of claviform defined by some black scales; orbicular and reniform brown-pink, with pale annuli and black outline, the former somewhat quadrate, oblique, open above, the latter constricted at middle and with its lower edge angled inwards on median nervure, the cell before and between the stigmata black-brown; the postmedial line bent outwards below costa, excurved to vein 4, then incurved, highly dentate, and with series of points on the veins; the subterminal line pale, angled outwards at vein 7, with some black suffusion on its inner edge at costa and black points at middle; a terminal series of black points. Hind wing pale pinkish slightly suffused with fuscous; a fine terminal dark line; the underside with discoidal point and indistinct sinuous postmedial line.

Hab. U.S.A., Washington Terr., 1 ♂ type. *Exp.* 36 millim.

Larva. (Original.) Head 2·5 millim., pale brown on the sides, reticulate with black, the vertical bands rather straight and all the space between them filled in with black; band from eye diffused; a patch behind eye. Body brown, scarcely mottled, somewhat thin-skinned. Dorsal space broadly pale, dusky shaded centrally, sharply limited by the black longitudinal subdorsal dashes; a dark shade above the position of the obsolete substigmatal band. Cervical shield a little darker than the body, cut by the narrow, faint, white dorsal line and pale-blotched subdorsally; spiracles black. Probably a general feeder.—H. G. D.

740. Agrotis trigonica.

Agrotis trigonica, Alph. Hor. Soc. Ent. Ross. xvii. p. 43, pl. 1. f. 39 (1872); Staud. Cat. Lep. pal. p. 139.
Agrotis capnoptera, Püng. Soc. Ent. xiii. p. 58 (1898).

♂. Head and thorax red-brown mixed with grey; palpi black-brown except at extremity; abdomen grey, the anal tuft and ventral surface tinged with pink. Fore wing pale red-brown suffused with grey, less prominently on medial area; a slight curved rufous subbasal line from costa to submedian fold; the antemedial line oblique, brown, slightly angled outwards on subcostal nervure and prominently above inner margin; orbicular and reniform concolorous defined by olive-brown, the former very open, **V**-shaped, the cell before and between the stigmata and below the orbicular deep olive-brown; postmedial line double, excurved below costa and at middle, incurved below vein 4, the veins beyond it with slight dark streaks; subterminal line indistinct, greyish, defined by brown on inner side, angled outwards at vein 7 and excurved at middle; a fine pale terminal line. Hind wing white, irrorated with purplish brown towards termen, the inner margin and cilia

tinged with pink; the underside with the costal area irrorated with purplish brown and with traces of a postmedial line.

Hab. W. Turkestan, Issyk-kul, 1 ♂; E. Turkestan, Ili. *Exp.* 40 millim.

741. Agrotis eugramma, n. sp. (Plate LXXI. fig. 11.)

♀. Head and thorax dark brown, the scales and hair tipped with grey; abdomen ochreous brown mixed with grey. Fore wing yellowish brown tinged with fuscous; the subbasal line represented by black spots below costa and cell; the antemedial line erect, double, slightly waved, the outer strong and somewhat diffused; claviform small, defined by black; orbicular round, defined by black; reniform blackish and with black outline and shade from it to inner margin; the postmedial line minutely dentate, double, the outer line faint, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line pale, interrupted, with irregular series of dentate black marks on its inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pale tinged with brown; a fine brown terminal line; cilia whitish with a brown line through them; the underside with diffused curved postmedial line showing through to upperside.

The spines on fore tibiæ very stout at extremity and on outer side.

Hab. W. China, Ta-chien-lu, 1 ♂ type, Leech Coll. *Exp.* 38 millim.

742. Agrotis cervina.

Mythimna cervina, Moore, P. Z. S. 1867, p. 47, pl. 6. f. 18; Hmpsn. Moths Ind. ii. p. 186.

♂. Head and thorax purplish grey; palpi bright rufous except at tips; tegulæ slightly edged with rufous and with a few rufous scales; pectus with the hair rufous; abdomen brownish ochreous, the ventral surface purplish pink. Fore wing purple-grey rather sparsely irrorated with rufous; the costal half of medial area rufous, shading off to irroration on inner half; the subbasal line rufous, rather ill-defined, double, waved, from costa to submedian fold; the antemedial line double, excurved from costa to median nervure, then incurved and bent outwards to inner margin; orbicular and reniform defined by rufous, the former oblique, elliptical, with its centre slightly defined by rufous, the latter with fuscous centre; the postmedial line double, straight from costa to vein 4, then incurved; the subterminal line rufous, somewhat punctiform, slightly angled outwards at vein 7 and excurved at middle; a terminal series of rufous points; cilia rufous. Hind wing fuscous brown with an ochreous tinge; the cilia pinkish; the underside paler and tinged with purplish pink, a slight sinuous postmedial line.

Hab. Sikhim (*Russell*), 1 ♂ type. *Exp.* 46 millim.

743. Agrotis fennica.

Agrotis fennica, Tausch. Mém. Mosc. i. p. 177, pl. 13. f. 4 (1811); Staud. Cat. Lep. pal. p. 143; Smith, Cat. Noct. N. Am. p. 74.
Hadena intracta, Wlk. xi. 584 (1857).

Head and thorax black-brown mixed with reddish brown and grey; abdomen grey-brown irrorated with fuscous. Fore wing long and narrow, purplish fuscous, suffused in parts with black and irrorated with a few grey scales; the inner area beyond the antemedial line often ochreous tinged with rufous; the subbasal line double, black, waved, from costa to submedian fold; the antemedial line double, excurved from costa to median nervure, incurved to vein 1, then excurved; claviform elongate, outlined in black; orbicular and reniform whitish, outlined in black, the former small, oblique, elliptical, the latter with fuscous patches in its upper and lower extremities; an indistinct waved medial line; the postmedial line double, dentate, strongly bent outwards below costa, excurved to vein 4, then incurved; a waved subterminal line, angled outwards at vein 7 and excurved at middle, with a series of small dentate black marks on its inner edge, those above veins 4, 5 developed into streaks; some pale points on costa towards apex and a terminal series of black points. Hind wing semihyaline white tinged with brown; the veins brown; the terminal area suffused with fuscous; cilia white.

Hab. Arctic America (*Richardson*), 1 ♀, type *intracta*; Alaska, Kodiak I., 1 ♂; Canada, Hudson's Bay, St. Martin's Falls (*Barnston*), 2 ♂, Nova Scotia (*Redman*), 1 ♂; U.S.A., Massachusetts, New York, Lewis Co., 2 ♂, 2 ♀; Britain (once); Switzerland; Russia, St. Petersburg, 1 ♀; Siberia, Irkutsch, 2 ♂, 1 ♀; E. Turkestan, Thian Shan; Amurland, Kentei, Ussuri. *Exp.* 38–44 millim.

Larva. Can. Ent. xvi. p. 204 (1884).

(Redescribed.) Head 3 millim., pale brown on the sides, broadly shaded with black over the face, the edges of this marking diffused; no distinct reticulations. Body black, very heavily black-mottled on a brown ground, the feet pale. Dorsal line obsolete; subdorsal indicated by three rows of white crinkled dots, of which the lower is more distant and distinct, the upper two smaller and confused; substigmatal band waved, composed of two parallel distinct white lines, broken into dots by the folds. A general feeder.—H. G. D.

744. Agrotis velata.

Agrotis velata, Staud. Stett. ent. Zeit. 1888, p. 247; id. Rom. Mém. vi. pl. 6. f. 4; id. Staud. Cat. Lep. pal. p. 136.

♀. Head and thorax dark brown; abdomen grey-brown. Fore wing dark red-brown, the costal area to postmedial line, the inner and terminal areas suffused with grey; the antemedial line defined by grey on inner side, obliquely excurved; orbicular and reniform small with brown centres and grey annuli, the former round, the cell before and between them suffused with black; the postmedial line defined by grey on outer side, bent outwards below costa,

excurved to vein 4, then oblique and slightly angled outwards at vein 1; the subterminal line only defined by the area beyond it being greyer, slightly angled outwards at vein 7 and excurved at middle. Hind wing grey suffused with brown; the underside with indistinct diffused postmedial band.

Hab. Amurland, Ussuri, 1 ♀. *Exp.* 36 millim.

745. Agrotis oblata. (Plate LXXI. fig. 12.)

Agrotis oblata, Morr. Proc. Bost. Soc. N. H. xviii. p. 116 (1875); Smith, Cat. Noct. N. Am. p. 73.
Agrotis hilliana, Harv. Can. Ent. x. p. 55 (1878).

♀. Head and thorax clothed with ochreous, bright rufous, and a few whitish scales; palpi with some white scales at sides, pale at tips; tarsi with pale rings; abdomen fulvous. Fore wing clothed with grey, fuscous, ochreous, and bright rufous scales, the basal and postmedial areas greyest, the medial and terminal most rufous; a black streak below basal half of cell; a double, waved, black subbasal line from costa to vein 1; a double antemedial line, its outer part prominently black, excurved above inner margin; orbicular and reniform with pale centres, rufous annuli, and very prominent black outlines, the former large, oblique, elliptical, the latter constricted at middle, the obscure waved medial shade passing between them; the postmedial line dentate, defined by grey on outer side, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line angled outwards at vein 7 and excurved at middle, defined by dark suffusion on inner side and the area beyond it rufous. Hind wing pale ochreous with dark discoidal point, indistinct dentate postmedial line, and diffused subterminal line.

Hab. Canada, Anticosti I.; U.S.A., New York, Lewis Co. (*Hills*), 1 ♂, type *hilliana*, Nevada, California, Sierra Nevada. *Exp.* 40 millim.

746. Agrotis flavotincta. (Plate LXXI. fig. 13.)

Noctua flavotincta, Smith, Ent. News, iii. p. 252 (1892); id. Trans. Am. Ent. Soc. xxi. p. 45, pl. 1. f. 2.

Head and tegulæ ochreous largely mixed with rufous; palpi black at sides except at tips; sides of frons, vertex of head, and neck with small black spots; thorax ochreous slightly irrorated with brown; pectus, legs, and abdomen ochreous tinged with brown. Fore wing pale purplish brown, the costal area pale to the postmedial line; the subbasal line represented by black points below costa and cell; a black streak in base of submedian fold; the antemedial line black, defined by ochreous on inner side, slightly excurved in and below cell; claviform rather elongate, almost filled in with black; orbicular and reniform brownish, with pale annuli defined by black, the former oblique, elongate or elliptical, the latter constricted at middle, the cell before and between them black, a black streak from reniform to postmedial line, which is

black defined by ochreous on outer side, minutely dentate, excurved from below costa to vein 4, then oblique; the subterminal line ochreous with black suffusion on its inner edge, angled outwards at vein 7 and excurved at middle; a terminal black line with series of points on it. Hind wing ochreous suffused with fuscous brown; the cilia yellow; the underside yellowish, the costal and terminal areas irrorated with brown and with traces of postmedial and subterminal lines.

Hab. Canada, Br. Columbia, Vancouver I. (*J. J. Walker*), 1 ♀. *Exp.* 38 millim.

747. Agrotis collina.

Noctua collina, Boisd. Ind. Meth. p. 105 (1840); Herr.-Schäff. Schmett. Eur., Noct. f. 142; Staud. Cat. Lep. pal. p. 138.
Noctua montana, Frr. Beitr. Eur. Schmett. vi. pl. 569. f. 3 (1852), & vii. pl. 698.
Agrotis kenteana, Staud. Iris, v. p. 353 (1892).

Head and thorax red-brown suffused with purple; palpi with some black at sides; tips of tegulæ and thoracic crests sometimes blackish; tarsi black with ochreous rings; abdomen grey-brown, the anal tuft and ventral surface purplish red. Fore wing purplish red, the veins irrorated with grey and fuscous; the subbasal line black, defined by whitish on outer side, angled outwards below costa and with short black streak below its extremity in submedian fold; the antemedial line blackish and grey, waved and angled outwards below costa and above inner margin; claviform small, obscurely defined by black; orbicular and reniform with fuscous centres and whitish annuli defined by black, the former large, rounded, the cell before and between them suffused with black; the postmedial line dentate and produced to black and white points on the veins, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; traces of a subterminal line, slightly angled outwards at vein 7 and excurved at middle; a terminal series of pale points. Hind wing fuscous brown; the cilia ochreous at tips; the underside pale irrorated with fuscous, the costal area tinged with red, a small discoidal spot and sinuous postmedial line.

Ab. 1. *centeana*. Browner; fore wing with the markings less prominent.—S.E. Siberia and Amurland.

Hab. Alps of S. France & Switzerland; Germany, Silesia, Zeller & Frey Colls.; Galicia; Bucovina; Rumelia; Sweden; Russia, Livonia; W. Turkestan, Issyk-kul; Tibet, Kuku-noor; S.E. Siberia, Amurland, Kentei, 1 ♂. *Exp.* 32–36 millim.

Larva. Staud. Stett. ent. Zeit. xlv. p. 203 (1884).

Purplish grey; dorsal line pale defined by black; a subdorsal series of black points; lateral line yellowish defined by a series of dentate black marks above; a yellowish bar on 11th somite; stigmata white with black annuli; head red-brown. Food-plants: *Plantago lanceolata*, *Rumex hydrolapathum*, and *Taraxacum*.

748. Agrotis melancholica. (Plate LXXI. fig. 14.)

Agrotis melancholica, Led. Verh. zool.-bot. Ges. Wien, 1853, p. 367, pl. 4. f. 3; Staud. Cat. Lep. pal. p. 141.

♀. Head and thorax dark brown, the scales tipped with grey; palpi pale at tips, tegulæ ochreous at base; tarsi with pale rings; abdomen ochreous. Fore wing purplish fuscous with a greyish tinge; the subbasal line black, from costa to submedian fold, defined by grey on outer side and with a black spot beyond its lower extremity; the antemedial line defined by greyish on each side, oblique from costa to subcostal nervure, where it is obtusely angled and strongly excurved above inner margin; claviform diffused, blackish; orbicular and reniform with slight ochreous annuli defined by black, the former oblique, elliptical, the latter constricted at middle, the cell before and between them and some streaks from reniform to postmedial line black-brown; an oblique waved line from lower angle of cell to inner margin; postmedial line minutely dentate, defined by grey on outer side and with a fine evenly curved line just beyond it, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line defined by fuscous suffusion and fine black streaks on its inner side, angled outwards at vein 7, excurved at middle, and angled inwards in submedian fold; some pale points on costa towards apex; a fine waved terminal line; cilia ochreous and fuscous. Hind wing pale silky yellow, a slight curved postmedial line, with the area beyond it tinged with fuscous; the underside with the line more distinct, the costal and terminal areas suffused with fuscous.

Hab. W. Siberia, Altai, 1 ♀, Zeller Coll.; Tibet, Kuku-noor, Amdo; Amurland, Ussuri. *Exp.* 36 millim.

749. Agrotis sareptana.

Agrotis sareptana, Herr.-Schäff. Schmett. Eur. ii. p. 359, Noct. f. 546 (1845); Staud. Cat. Lep. pal. p. 139.

♀. Head and thorax fuscous brown mixed with grey, the tips of patagia and thoracic crests grey; tarsi with pale rings; abdomen grey-brown. Fore wing grey, irrorated with fuscous and tinged with purplish, the terminal area fuscous grey; a subbasal patch below the cell formed of black scales; the antemedial line indistinct, sinuous; claviform grey, with some black scales at its origin on outer edge of antemedial line and at its extremity; orbicular and reniform with slender white annuli defined by black, the former oblique, elliptical, open above, the cell before and between them black; an indistinct oblique line from lower angle of cell to inner margin; the postmedial line slightly bent outwards below costa, excurved to vein 4, then incurved, defined by the area beyond it being darker; some pale points on costa towards apex; the subterminal line fine, grey, angled outwards at vein 7 and excurved at middle. Hind wing grey suffused with fuscous brown, especially

towards termen; cilia whitish, with a brown line through them; the underside whitish, irrorated with fuscous and suffused on terminal area, a dark discoidal spot.

Hab. S. Russia, Sarepta (*Christoph*), 1 ♀; Asia Minor, Pontus. *Exp.* 40 millim.

*750. Agrotis trisignata.

Agrotis trisignata, Mssn. Stübel's Reise, p. 143, pl. vi. f. 21 (1890).

♂. Head and thorax grey-brown; abdomen ochreous brown. Fore wing grey-brown, the lines indistinct; a wedge-shaped black patch below base of cell; the cell filled in with black before and between the stigmata, the orbicular small, elliptical, open above, the reniform indistinctly defined except on inner side; a terminal series of black points. Hind wing pale grey, the veins dark, the costal and terminal areas tinged with fuscous.

Hab. Ecuador, Antisana. *Exp.* 34 millim. This species is unknown to me, type in Berlin Mus.; structural characters examined by Prof. Karsch.

751. Agrotis bonsa. (Plate LXXI. fig. 15.)

Agrotis bonza, Püng. Iris, xii. p. 290, pl. 8. f. 13 (1900); Staud. Cat. Lep. pal. p. 141.

♂. Head and thorax brown mixed with grey and ochreous; palpi blackish at sides, whitish at tips; tegulæ with a purplish tinge, black at base; tarsi with ochreous rings; abdomen brownish grey, ochreous at extremity, the ventral surface fuscous. Fore wing pale brown tinged with grey, the costal area suffused with purplish red; a double, waved, subbasal line from costa to submedian fold, where there is a black streak from its extremity to the double, oblique, waved antemedial line, which has black points on its outer side at costa and submedian fold; claviform narrow, defined by black; orbicular and reniform with slight greyish annuli defined by black, the former elliptical, oblique, the latter narrow, the cell black before and between the stigmata; an indistinct medial line angled outwards in cell and on vein 1; postmedial line double, rather indistinct except at costa, minutely waved, bent outwards below costa, excurved to vein 4, then incurved, some pale points on costa beyond it; subterminal line ochreous, defined by a dark shade on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of small dark lunules. Hind wing ochreous white suffused with fuscous, especially on costal and terminal areas towards apex; cilia ochreous; the underside with the costal area irrorated with brown, a discoidal point and terminal dark line.

Hab. W. Turkestan, Alexander Mts., 1 ♂; Tibet, Amdo. *Exp.* 38 millim.

752. **Agrotis poliogramma**, n. sp. (Plate LXXI. fig. 16.)

♀. Head and thorax black-brown mixed with grey and pale brown; tegulæ with black medial line and black at tips; tarsi ringed with white; abdomen ochreous mixed with dark brown. Fore wing dark brown irrorated with grey, thickly on basal and terminal areas; the veins streaked with grey; the subbasal line represented by black striæ from costa and median nervure, defined by grey on outer side and with black patch beyond it below the cell; the antemedial line angled outwards below costa, oblique to vein 1, then strongly angled outwards above inner margin, defined by grey on inner side; claviform defined by black, acute at extremity, and with an oblique ochreous-white fascia from it to postmedial line; orbicular and reniform with grey annuli defined by black, their centres irrorated with grey, the former oblique, open above, the latter angled inwards on median nervure; the postmedial line defined by grey on outer side, minutely dentate, bent outwards below costa, very slightly angled inwards in discal fold and oblique below vein 4; the subterminal line grey, defined by a series of dentate black marks on inner side, slightly angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; cilia intersected with grey. Hind wing fuscous brown, with fine dark terminal line; the cilia whitish, with brown line at base; the underside grey thickly irrorated with dark brown, a sinuous postmedial line.

Hab. Kashmir, Barra Larcha (*McArthur*), 1 ♀ type, Goorais Valley (*Leech*), 1 ♀. *Exp.* 36 millim.

753. **Agrotis albifurca.**

Agrotis albifurca, Ersch. Hor. Soc. Ent. Ross. xii. p. 337 (1877); Alph. Hor. Soc. Ent. Ross. xvii. p. 44, pl. 2. f. 43; Staud. Cat. Lep. pal. p. 151.
Agrotis costata, Staud. Stett. ent. Zeit. 1881, p. 420.

♀. Head and thorax grey mixed with brown and black; abdomen brownish ochreous. Fore wing grey suffused with purplish fuscous and black; the costal area grey to the postmedial line; the median nervure and nervules defined by ochreous streaks to the subterminal line; vein 1 whitish towards base, then black on an ochreous fascia arising from inner margin near base; the subbasal line double, black, filled in with grey from costa to submedian fold; the antemedial line placed on an ochreous band and with some rufous before it below costa, angled outwards at subcostal nervure, then oblique and obsolete below vein 1; claviform very large, defined by black; orbicular oblique elliptical, ochreous defined by black; reniform with its upper part ochreous, its lower part blackish and dilated, defined by black, and with its centre defined by blackish; the postmedial line blackish, defined by ochreous on outer side, obliquely bent outwards from below costa to vein 6, oblique below vein 4, an ochreous patch on costal area between it and the subterminal line, which is ochreous, with a prominent series of dentate black marks on its inner side, slightly angled outwards at vein 7 and

excurved at middle, interrupted at the veins; a terminal series of black points. Hind wing ochreous suffused with brown, especially towards termen; cilia ochreous white; underside ochreous, the veins striated with brown, the costal area irrorated with brown, a dark discoidal point and postmedial line on costal area only.

Hab. W. Siberia, Altai; W. Turkestan, Issyk-kul, Tarbagatai Mts.; E. Turkestan, Thian-Shan Mts., Korla; Mongolia, Illiassatai Mts., Urga; Tibet, Kuku-noor; E. Siberia, Kentei, 1 ♀. *Exp.* 38 millim.

754. Agrotis agalma. (Plate LXXI. fig. 17.)

Agrotis agalma, Püng. Iris, xii. p. 289, pl. 8. f. 7 (1900); Staud. Cat. Lep. pal. p. 139.

Head and thorax rufous mixed with grey; palpi at tips and vertex of head grey-white; tegulæ at base greenish white; abdomen brownish grey, darker below. Fore wing blue-grey; the cell and area beyond and below it from subbasal to postmedial line brown, leaving the median nervure and nervules grey defined by red; the subbasal line prominent, waved, from costa to submedian fold; the antemedial line double, filled in with grey, the outer line prominent, acutely angled outwards below costa, then with an oblique inward curve to vein 1, where it is obtusely angled; stigmata with rufous centres and grey annuli defined by black, claviform large, orbicular oblique, elliptical, open above, reniform more or less angled inwards on median nervure; the postmedial line minutely waved, defined by grey on outer side, excurved from costa to vein 4, then incurved; the postmedial area tinged with pale rufous; the subterminal line pale, with a prominent series of more or less developed dentate black marks before it, angled outwards at vein 7 and excurved at middle; a fine waved terminal line. Hind wing fuscous brown with a grey tinge; cilia grey, with a brown line at base; the underside paler, with dark discoidal lunule and sinuous postmedial line.

Hab. Tibet, Kuku-noor, Amdo, Sinin Mts., 1 ♂, 1 ♀. *Exp.* 40 millim.

755. Agrotis substrigata. (Plate LXXI. fig. 18.)

Noctua substrigata, Smith, Ent. News Philad. vi. p. 332, pl. xv. f. 4 (1895).

♂. Head and tegulæ rufous; palpi pale at tips, neck with black patch above, tegulæ white at tips; thorax brown mixed with black; abdomen ochreous brown; pectus, legs, and ventral surface of abdomen blackish mixed with grey. Fore wing fuscous black; a whitish and black subbasal line from costa to median nervure and a black patch below cell; an antemedial blackish line defined on each side by whitish, angled outwards below costa, then incurved, obsolete towards inner margin; claviform large, its extremity and lower edge defined by black, an ochreous-white fascia from antemedial to postmedial line on vein 1, beyond the claviform expanding to vein 2

and at postmedial line to vein 3; orbicular and reniform fuscous black, with slight brownish annuli defined by black, the former elliptical, open above, the latter angled inwards on median nervure, the cell before and between them black; postmedial line pale ochreous, defined on each side by black, bent outwards below costa, excurved to vein 4, then oblique; some pale points on costa towards apex; the subterminal line defined by the area beyond it being brownish, excurved at vein 7 and middle; a series of black points just before termen. Hind wing ochreous, tinged with fuscous brown especially towards termen; cilia white; underside whitish, the costal area irrorated with brown, a curved postmedial line and terminal fuscous band.

Hab. Canada, Calgary (*Wolley-Dod*), 3 ♂, 3 ♀. *Exp.* 36 millim.

756. Agrotis cœlebs. (Plate LXXI. fig. 19.)

Agrotis cœlebs, Staud. Iris, xii. p. 360, pl. 6. f. 4 (1900).
Agrotis juvenis, Staud. Cat. Lep. pal. p. 141 (1901).

♂. Head and thorax clothed with black, brown, and grey scales; tarsi banded with black; abdomen grey, ventrally blackish. Fore wing grey, suffused with black, leaving grey streaks on the veins to the postmedial line; subbasal line defined by grey on outer side, waved from costa to submedian fold where there is a black patch beyond its extremity; antemedial line indistinctly double, waved and angled outwards above inner margin; claviform an indistinct elongate pale streak obscurely defined by black; orbicular and reniform small, with brownish centres and grey annuli defined by black, the former round, the cell before and between them blackish; postmedial line minutely waved, defined by grey on outer side, bent outwards below costa, excurved to vein 4, then oblique; subterminal line indistinct, grey, with obscure dentate blackish marks before it; a terminal series of black points. Hind wing white, the costal and terminal areas tinged with brown; the underside with the costal area irrorated with fuscous.

Hab. Asia Minor, Taurus, Zeitun, 1 ♂; ? Persia. *Exp.* 30 millim.

757. Agrotis limenia.

Agrotis limenia, Druce, P. Z. S. 1890, p. 514; id. Biol. Centr.-Am., Het. ii. p. 482, pl. 154. f. 3.

Head, thorax, and fore wing ochreous brown, red-brown, or purplish brown; palpi with fuscous patches at sides; abdomen red-brown, dorsally suffused with fuscous. Fore wing with comma-shaped grey-edged deep black spot below base of cell, its tail towards base; the subbasal line represented by a slight striga on costa; the antemedial line much nearer base than usual, very indistinct, angled outwards below costa, then bent inwards; the orbicular represented by a dark or dark-edged white point; reniform whitish, its centre

and circumference defined by fuscous; the postmedial line more towards termen than usual, curved, dentate, rather indistinct; the subterminal line pale, defined by brownish on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points usually present; cilia ochreous with fuscous line through them. Hind wing dark brown, the interspaces of discal area whitish and semihyaline; cilia brown at base, whitish at tips; the underside pale, the costal and terminal areas brownish irrorated with fuscous, a black discoidal lunule and curved sinuous postmedial line.

Hab. Mexico, Jalapa (*Trujillo*), 2 ♂, 1 ♀; Guatemala (*Rodriguez*), 2 ♂, 1 ♀ type Godman-Salvin Coll. *Exp.* 56–58 millim.

b^2. Palpi with the 2nd joint fringed with hair in front.
  a^3. Abdomen of female with pair of sublateral foveas near extremity.
    a^4. Fore wing with the orbicular stigma more or less elongate, elliptical ..... *unicolor.*
  b^4. Fore wing with the orbicular stigma round..... *suecica.*

758. Agrotis unicolor.

Mamestra unicolor, Wlk. ix. 233 (1856).
Noctua clandestina, Harris, Inj. Ins. p. 448 (1862); Riley, 1st Rep. Ins. Mo. p. 79, pl. 1. f. 13; Smith, Cat. Noct. N. Am. p. 75; Staud. Cat. Lep. pal. p. 136.
Mamestra nigriceps, Wlk. xxxii. 659 (1865).

Head and tegulæ black-brown; thorax grey-brown, the scales tipped with grey; legs blackish, the tarsi with pale rings; abdomen

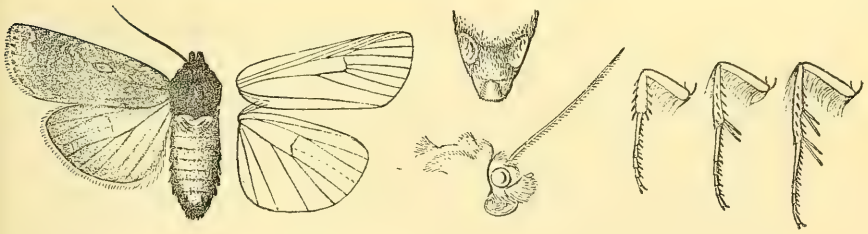


Fig. 77.—*Agrotis unicolor*, ♀. ½.

grey-brown. Fore wing grey-brown, irrorated with grey and fuscous; a fine black streak often present in basal half of submedian fold; a double, waved, subbasal line from costa to submedian fold; the antemedial line double, acutely angled outwards below costa, in cell, in submedian fold and above inner margin and inwards on subcostal and median nervures and vein 1; claviform sometimes indicated by a few black scales; orbicular and reniform defined by black, the former small to large, elongate, the latter open above and below, the stigmata often connected by a black streak in discal fold;

the postmedial line double, minutely dentate, strongly bent outwards below costa, slightly angled inwards in discal fold and incurved below vein 4; traces of a pale subterminal line angled outwards at vein 7; a terminal series of black points. Hind wing whitish, suffused with brown especially on veins and terminal area; the underside white, the costal area irrorated with brown; a brown discoidal spot.

The female has large paired sublateral foveal depressions with a few long spatulate scales in them on the penultimate abdominal segment.

Hab. Greenland, 1 ♀; Canada (*Norman*), 1 ♀, Manitoba (*Russell*), 1 ♂, Nova Scotia (*Redman*), 1 ♂, 2 ♀; U.S.A., Eastern and Central States, Massachusetts, Beverly, 1 ♂, 2 ♀, New York, Trenton Falls, 5 ♂, 5 ♀, type; Kamschatka. *Exp.* 38–48 millim.

Larva. Saunders, Fruit-Insects, p. 108, ff. 106, 107.

(Redescribed.) Head 3 millim., pale brown, reticulate, curved vertical band broad, black, the one upward from the eye distinct, brown. Body brown, thickly mottled on a cream-coloured ground; cervical shield a shade darker with dorsal and subdorsal whitish lines; dorsal line narrow, whitish, obscure; subdorsal oblique shades forming distinct oblique brown patches on joints 5 to 12, all large, whitish-edged behind, the pair on joint 12 narrowly joined, resting on the whitish subdorsal line; lateral oblique shades upward and forward from the spiracles, small, diffuse; substigmatal band obscure, a little more reddish than the ground-colour, defined by its whitish edges; spiracles black-rimmed. A general feeder.—H. G. D.

*759. Agrotis suecica. (Plate LXXI. fig. 20.)

Agrotis suecica, Auriv. Nord. Fjär. p. 121, f. 24 (1890); Staud. Cat. Lep. pal. p. 136.

Head and thorax reddish brown with a purple gloss and irrorated with black; abdomen fuscous. Fore wing reddish brown irrorated and suffused with fuscous and with a purplish gloss; the subbasal line represented by double black striæ from costa; the antemedial line double, angled outwards below costa, in cell, in submedian fold and more strongly above inner margin; claviform obsolete; orbicular and reniform small, slightly defined by black, the former rather elliptical; the postmedial line double, dentate, and produced to points on the veins, bent outwards below costa, angled inwards at discal fold, incurved below vein 4; subterminal line obsolete. Hind wing whitish, almost uniformly suffused with brown; the cilia white with a brown line at base; the underside whitish, the costal area strongly and the terminal area slightly irrorated with brown, a small discoidal spot and postmedial line on costal area.

The male has the claspers long and exserted; the female has paired sublateral, almost naked foveal depressions on penultimate segment of abdomen.

Hab. Sweden, type † ♂ ♀ in Mus. Stockholm. *Exp.* 38 millim.

b^3. (*Agrotis*). Abdomen of female without foveas.
a^4. Tegulæ black at base, grey at tips.
a^5. Vertex of head whitish.
a^6. Fore wing with the lines distinctly defined by grey.
a^7. Fore wing with the antemedial line angled outwards below costa, then incurved ..... *deplana.*
b^7. Fore wing with the antemedial line sinuous. *multangula.*
b^6. Fore wing with the lines obsolescent.
a^7. Hind wing white ..... *capnistis.*
b^7. Hind wing suffused with fuscous ..... *juncta.*
b^5. Vertex of head purplish-grey.
a^6. Fore wing with the subterminal line distinct. *rectangula.*
b^6. Fore wing with the subterminal line almost obsolete ..... *patefacta.*
b^4. Tegulæ concolorous.
a^5. Frons black.
a^6. Fore wing red-brown, the subterminal line pale, distinct ..... *atrifrons.*
b^6. Fore wing grey tinged with rufous, the subterminal line obsolete ..... *piscipellis.*
b^5. Frons concolorous.
a^6. Fore wing broad, the apex rectangular.
a^7. Hind wing white, the termen tinged with fuscous ..... *cinereicollis.*
b^7. Hind wing with the basal area whitish, the terminal half suffused with fuscous ..... *melanura.*
c^7. Hind wing uniformly suffused with fuscous. *subporphyria.*
b^6. Fore wing narrow, the apex rounded.
a^7. Hind wing white, the termen tinged with fuscous.
a^8. Fore wing white irrorated with black ... *tepperi.*
b^8. Fore wing ochreous more or less suffused with reddish brown.
a^9. Fore wing with highly dentate antemedial line emitting teeth to base.
a^{10}. Fore wing with black fascia in cell between the stigmata.
a^{11}. Fore wing with black streak below base of cell ..... *annularis.*
b^{11}. Fore wing without black streak below base of cell.
a^{12}. Fore wing with the antemedial line dentate towards costa ..... *dispilata.*
b^{12}. Fore wing with the antemedial line waved towards costa ..... *sicca.*
b^{10}. Fore wing without black fascia in cell between the stigmata ..... *putris.*
b^9. Fore wing without highly dentate antemedial line emitting teeth to base.
a^{10}. Fore wing with black fascia in cell between the stigmata.
a^{11}. Fore wing with black streak below base of cell ..... *coniorta.*
b^{11}. Fore wing without black streak below base of cell.
a^{12}. Fore wing with the black streak beyond reniform extending to termen ..... *effracta.*
b^{12}. Fore wing with the black streak beyond reniform not extending beyond subterminal line ..... *talda.*

b^{10}. Fore wing without black fascia in cell between the stigmata ..... *cinctithorax.*
b^{7}. Hind wing white at base, the terminal half suffused with fuscous.
a^{8}. Fore wing with the claviform stigma present ..... *catenifera.*
b^{8}. Fore wing with the claviform stigma absent or almost so.
a^{9}. Fore wing with more or less developed black streak below base of cell ..... *ravida.*
b^{9}. Fore wing without black streak below base of cell.
a^{10}. Fore wing with the orbicular entire. *inopinata.*
b^{10}. Fore wing with the orbicular open above.
a^{11}. Fore wing with the orbicular large, round.
a^{12}. Fore wing fuscous brown ..... *sierra.*
b^{12}. Fore wing pale grey-brown..... *aucta.*
b^{11}. Fore wing with the orbicular small, oblique elliptical ..... *squalida.*
c^{7}. Hind wing uniformly suffused with fuscous.
a^{8}. Fore wing broader.
a^{9}. Fore wing greyish fuscous brown..... *unimacula.*
b^{9}. Fore wing more yellowish brown.
a^{10}. Fore wing broad; cilia with pale points at base ..... *augur.*
b^{10}. Fore wing narrow; cilia with pale line at base..... *sibirica.*
c^{9}. Fore wing red-brown ..... *jalapa.*
b^{8}. Fore wing narrower.
a^{9}. Fore wing with the orbicular defined by black.
a^{10}. Fore wing with the postmedial line angled inwards at submedian fold. *havilæ.*
b^{10}. Fore wing with the postmedial line incurved at submedian fold.
a^{11}. Fore wing without black in cell between the stigmata ..... *lucens.*
b^{11}. Fore wing with black in cell between the stigmata.
a^{12}. Hind wing dark fuscous brown ... *senna.*
b^{12}. Hind wing pale fuscous grey..... *deplorata.*
b^{9}. Fore wing with the orbicular obsolete. *clemens.*

760. Agrotis deplana.

Noctua deplana, Frr. Beitr. Eur. Schmett. v. pl. 448. f. 3 (1831); Herr.-Schäff. Eur. Schmett., Noct. f. 79.
Agrotis deplanata, Ev. Faun. Volg. Ur. p. 185 (1844); Staud. Cat. Lep. pal. p. 141.
Agrotis autumnalis, Oberth. Ét. Ent. v. p. 74, pl. 7. f. 10 (1880).

Head and thorax brownish grey; palpi blackish at sides; base of tegulæ black; abdomen pale brownish. Fore wing grey irrorated with brown; a waved black subbasal line from costa to submedian fold, with a slighter line beyond it; the antemedial line double, angled outwards below costa and strongly above inner margin, incurved between those points, the claviform large, defined by grey, with a small black spot at its base; orbicular and reniform grey,

defined by the cell before and between them being black; an indistinct waved oblique line from cell to inner margin; the postmedial line defined by grey on outer side, very minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line grey, defined by fuscous suffusion on its inner side, slightly angled outwards at vein 7 and excurved at middle; a terminal series of dark points. Hind wing grey tinged with ochreous, the terminal area with fuscous; the underside yellowish white, the costal area thickly, the terminal area slightly irrorated with brown; traces of a curved postmedial line, more prominent towards costa.

Hab. Russia, Urals; W. Siberia, Dahuria, 1 ♂, 1 ♀, Altai, 3 ♀; Tibet, Kuku-noor, Amdo; Amurland, 1 ♂, 1 ♀, Ussuri. *Exp.* 32 millim.

761. Agrotis multangula.

Noctua multangula, Hübn. Samml. Eur. Schmett., Noct. f. 116 (1827); Godt. Lép. Fr. v. p. 207, pl. 63. f. 6; Boisd. Icones, pl. 76. f. 2; Staud. Cat. Lep. pal. p. 141.
Noctua subrectangula, Staud. Cat. Lep. Eur. p. 83 (1871).
Noctua dissoluta, Staud. Iris, xii. p. 361 (1899).

Head, tegulæ, and prothoracic crest pale ochreous mixed with reddish brown; palpi black at sides except at extremity; tegulæ black at base; thorax pale reddish brown mixed with fuscous. Fore wing pale red-brown, irrorated with dark brown and slightly with white, especially on the veins to the postmedial line; the subbasal line represented by double black striæ from costa and median nervure; the antemedial line double, waved, angled outwards below costa and more strongly above inner margin, and with a black spot on its outer edge at base of claviform, which is large, slightly defined by whitish and black and with a blackish streak from it to postmedial line; orbicular and reniform with whitish annuli defined by black, the former round, the cell before and between them black, and slight black streaks from the latter to postmedial line, which is double, minutely dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the terminal area suffused with fuscous; the subterminal line pale, with slight dentate black marks on its inner side at middle, angled outwards at vein 7 and slightly dentate at veins 4 and 3; a terminal series of black points. Hind wing pale ochreous suffused with brown, especially on the veins and terminal area; cilia whitish with a brown line at base; the underside whitish, the costal area irrorated with brown, the terminal area suffused with fuscous especially towards apex, a slight curved postmedial line.

Ab. 1. *subrectangula*. Slightly darker.

Ab. 2. *dissoluta*. Paler; the fore wing greyer.

Hab. France, Sand Coll.; Germany, Zeller & Frey Colls.; Austria, Zeller Coll.; Hungary, Leech Coll.; Switzerland, Frey Coll.; N. Spain; Russia, Urals; Armenia, Caucasus, Zeller Coll.; Asia Minor, Pontus; Persia; W. Turkestan, Issyk-kul; E. Turkestan, Kashgar, Ili; Tibet, Amdo; Amurland, Ussuri. *Exp.* 32–36 millim.

762. Agrotis capnistis. (Plate LXXI. fig. 21.)

Agrotis capnistis, Led. Hor. Soc. Ent. Ross. viii. p. 14, pl. ii. f. 1 (1871); Staud. Cat. Lep. pal. p. 141.

♂. Head and thorax grey mixed with brown and black; tegulæ black at base; tarsi banded with black; abdomen white tinged with brown. Fore wing grey suffused and irrorated with black, leaving grey streaks on the veins, the costal area greyer to the postmedial line; the subbasal line represented by double black strigæ filled in with grey from costa and cell; the antemedial line black, defined by grey on inner side, interrupted at the veins and angled outwards above inner margin; claviform elongate, defined by grey and black; cell filled in with blackish defining the orbicular and reniform, which are grey with their centres brownish; postmedial line blackish defined by grey on outer side, minutely waved, bent outwards below costa, slightly incurved at discal fold, incurved below vein 4; the subterminal line represented by a series of grey points angled outwards at vein 7 and excurved at middle; a fine pale terminal line. Hind wing white, the veins and marginal areas tinged with brown; underside white, the costal area irrorated with brown and with a dark postmedial bar.

Hab. Asia Minor, Pontus, Amasia, 1 ♂; Syria; N. Persia; W. Turkestan; E. Turkestan, Ili. *Exp.* 34 millim.

763. Agrotis juncta. (Plate LXXI. fig. 22.)

Agrotis juncta, Grote, Bull. Geol. Surv. iv. p. 171 (1878); Smith, Cat. Noct. N. Am. p. 74.

♂. Head whitish; tegulæ black-brown tipped with white; thorax pale rufous mixed with ochreous, some of the scales tipped with grey; abdomen whitish mixed with brown, the anal tuft fulvous. Fore wing purple, showing the greyish ground-colour in places; the subbasal line represented by black spots below costa and cell; the antemedial line black, somewhat irregularly excurved and acutely angled inwards on vein 1; claviform very elongate, with pale outline and some black at base; orbicular and reniform with pale outlines, confluent in lower part of cell, there being a quadrate black spot between their upper portions; the postmedial line black, minutely dentate, strongly bent outwards below costa, excurved to vein 4, then incurved; traces of a subterminal line. Hind wing whitish suffused with brown, the base pale.

Hab. Canada, Nova Scotia, 1 ♂ type. *Exp.* 34 millim.

764. Agrotis rectangula.

Noctua rectangula, Schiff. Wien. Verz. p. 78 (1776); Fabr. Mant. Ins. ii. p. 155 (1787); Hübn. Eur. Schmett., Noct. f. 110; Godt. Lép. Fr. ii. p. 248, pl. 68. f. 2; Staud. Cat. Lep. pal. p. 141.
Agrotis anderreggii, Boisd. Ic. Lép. d'Eur. pl. 76. f. 6 (1832).
Agrotis exclamans, Ev. Bull. Soc. Imp. Nat. Mosc. 1841, i. p. 27, pl. 3. ff. 5, 6.
Agrotis rectangula, var. *acutangula*, Staud. Iris, v. p. 355 (1892).

Head and thorax purplish brown, the scales tipped with grey;

palpi at sides except extremity, antennæ, and base of tegulæ black; tibiæ and tarsi mixed with black, with pale bands; abdomen whitish, suffused with reddish brown especially towards extremity. Fore wing purplish brown irrorated with grey; a sinuous black subbasal line from costa to submedian fold; a pale subbasal line defined by black on outer side, angled outwards below costa, inwards on vein 1 and excurved above inner margin; claviform large, defined by whitish, its base black or rarely entirely filled in by black; the orbicular and reniform with whitish annuli defined by a few black scales, the former round, the latter with its lower edges produced inwards on median nervure and often confluent with the orbicular; a quadrate black patch in cell between the upper parts

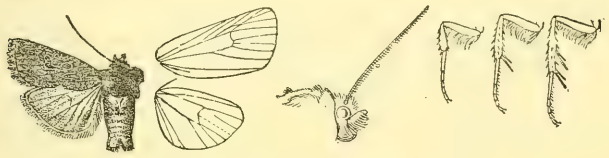


Fig. 78.—*Agrotis rectangula*, ♂. ½.

of stigmata; two black spots on medial part of costa; the postmedial line minutely dentate, black, defined by grey on outer side, strongly bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line defined by pale brownish on outer side, angled outwards at vein 7, then dentate; some dark points on termen. Hind wing pale suffused with brown, especially on the veins and terminal half; the underside with discoidal spot and curved postmedial line on costal half of wing.

The antennæ of male have some rough black scales at base of shaft.

Ab. 1. *anderreggi*. Head, thorax, and fore wing darker purplish fuscous.—Alps; Urals; C. Asia; Siberia; Kamschatka.

Ab. 2. *acutangula*. Fore wing browner, with the stigmata prominent.—C. Asia.

Hab. Switzerland, Frey Coll., 3 ♂, 2 ♀; Italy; Austria; Rumelia; Russia, Kasan, 2 ♂, Urals; Asia Minor, Pontus, Taurus; W. Siberia, Altai, 1 ♀; W. Turkestan, Ala Tau, Issyk-kul; E. Turkestan, Thian-Shan Mts.; E. Siberia, Kamschatka. *Exp.* 36 millim.

*765. Agrotis patefacta. (Plate LXXI. fig. 23.)

Noctua patefacta, Smith, Ent. News Philad. vi. p. 333, pl. xv. f. 2 (1895).

♂. Head and thorax dark purple-brown, some of the hairs tipped with grey; palpi black at sides; tegulæ with the basal half black; legs blackish with grey-brown hair; abdomen grey-brown, the anal tuft with a rufous tinge. Fore wing purple-brown suffused with black; the subbasal line represented by black spots below

costa and cell; the antemedial line angled outwards below costa and above inner margin and inwards on vein 1, developed into spots at costa and below cell; claviform defined by whitish, large; orbicular and reniform defined by whitish, the former round, the latter angled inwards and confluent with orbicular on median nervure, a quadrate black spot between them in cell, with two small black spots above it on costa; the postmedial line indistinct, bent outwards below costa, dentate to vein 2, then incurved; hardly a trace of the subterminal line; cilia fuscous mixed with ochreous. Hind wing ochreous whitish suffused with fuscous brown, especially towards termen; cilia ochreous white with brown line at base; underside whiter, the costal area irrorated with brown, the terminal area suffused with brown; a discoidal point and curved postmedial line.

Hab. Canada, Calgary, in Coll. Schaus. *Exp.* 38 millim.

766. Agrotis atrifrons. (Plate LXXI. fig. 24.)

Agrotis atrifrons, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 97 (1873); Smith, Cat. Noct. N. Am. p. 77.

♂. Frons black; palpi and vertex of head grey-brown with a slight rufous tinge, the former blackish at extremity; thorax grey-brown irrorated with grey; legs marked with fuscous above; abdomen grey irrorated with brown, the lateral tufts of hair towards extremity pinkish. Fore wing grey irrorated with black and suffused with ferruginous red on disk and terminal area; a subbasal black striga from costa; the antemedial line black, oblique, minutely dentate, with a longer tooth above inner margin; the stigmata obsolete; a slight blackish medial shade angled at lower angle of cell; the postmedial line black, minutely dentate and produced to short streaks on the veins, bent outwards below costa, excurved to vein 4, then incurved, and at inner margin somewhat approximated to the antemedial line; the veins of terminal area slightly streaked with black; no trace of subterminal line. Hind wing white, the veins and terminal area from apex to vein 2 brownish. Underside of both wings with curved dark postmedial line obsolete towards inner margin; hind wing with the costal area irrorated with brown.

Hab. U.S.A., Colorado, 1 ♂, New Mexico, Arizona. *Exp.* 38 millim.

767. Agrotis piscipellis. (Plate LXXI. fig. 25.)

Agrotis piscipellis, Grote, Can. Ent. x. p. 233 (1878); Smith, Cat. Noct. N. Am. p. 76.

♂. Head and thorax rufous; the palpi at tips and frons deep black; legs irrorated with black; pectus with some pale hair; abdomen grey-brown, the anal tuft ochreous, the ventral surface tinged with rufous. Fore wing rufous slightly irrorated with grey; the subbasal line represented by a black point on costa; the ante-

medial line black, slightly waved, and angled outwards below cell and above inner margin; stigmata absent; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line indistinct, grey, slightly angled outwards at vein 7 and excurved at median nervules. Hind wing white, the veins and inner and terminal areas tinged with brown. Underside of both wings with curved black postmedial line obsolete on inner area.

On the fore wing the lines may be absent or the veins streaked with black.

Hab. U.S.A., Colorado, 1 ♂ type, Nevada, Arizona. *Exp.* 34 millim.

*768. Agrotis cinereicollis. (Plate LXXI. fig. 26.)

Agrotis cinereicollis, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 79, pl. iv. f. 6 (1876).

Agrotis pallidicollis, Grote, Bull. Geol. Surv. vi. p. 154 (1880); Smith, Cat. Noct. N. Am. p. 77.

♀. Ochreous; head and tegulæ greyish white, the latter tipped with ochreous. Fore wing with the costal and terminal areas grey; the lines single, barely traceable; a black streak below base of cell; the antemedial line even, oblique; orbicular and reniform moderate, pale, confluent, defined by deeper ochreous brown, the former elliptical, produced on outer side and connected with the latter; the postmedial line angled beyond cell; the subterminal line only defined by the contrast between the postmedial and pale terminal areas. Hind wing whitish, the terminal area tinged with fuscous; a faint discoidal lunule; the underside ochreous whitish, with dark discoidal lunule and postmedial line.

Hab. U.S.A., California. *Exp.* 34 millim. This species is unknown to me; figured from a drawing from specimen in Am. Mus. Nat. Hist.

769. Agrotis melanura.

Agrotis melanura, Koll. Dalm. descr. del. Carrara, p. 99 (1846); Herr.-Schäff. Eur. Schmett., Noct. vi. p. 61, ff. 137, 138; Staud. Cat. Lep. pal. p. 146.

Agrotis grisescens, Staud. Hor. Soc. Ent. Ross. xiv. p. 427 (1878).

♀. Head and thorax white slightly irrorated with dark brown; tarsi banded with black; abdomen dorsally tinged with ochreous. Fore wing white slightly irrorated with dark brown; four dark points on costa; traces of a waved antemedial line from cell to inner margin; traces of a postmedial line bent outwards below costa, slightly angled inwards in discal fold and incurved below vein 4; the terminal fourth of wing suffused with black. Hind wing white, suffused with fuscous brown especially towards termen. Underside white, with the terminal area suffused with black, narrowing to tornus of hind wing.

Ab. 1. *grisescens*. Fore wing dull grey.

Hab. Dalmatia; Asia Minor, Pontus, 2 ♀, Taurus; Persia, Mesopotamia; W. Turkestan. *Exp.* 38 millim.

770. Agrotis subporphyra. (Plate LXXI. fig. 27.)

Mythimna subporphyrea, Wlk. xv. 1658 (1858); Smith, Cat. Noct. N. Am. p. 76.

♀. Head and tegulæ rufous; thorax rufous mixed with grey; abdomen ochreous tinged with fuscous. Fore wing purplish rufous slightly irrorated with grey; the subbasal line obsolete; the antemedial line indistinct, fuscous, slightly angled outwards below costa and excurved below the cell; the stigmata completely absent; the postmedial line indistinct, fuscous, slightly bent outwards below costa, excurved between veins 5 and 3, then oblique; a subterminal greyish line angled outwards at vein 7 and excurved at median nervules. Hind wing ochreous suffused with brown, the underside with the costal area suffused with rufous.

Hab. U.S.A., Georgia (? *Abbot*), 2 ♀ type. *Exp.* 46 millim.

*771. Agrotis tepperi.

Agrotis tepperi, Smith, Pr. U.S. Nat. Mus. x. p. 452 (1887); id. Cat. Noct. N. Am. p. 77.

White, sparsely irrorated with black; tegulæ tipped with black. Fore wing with the lines single, fuscous; the antemedial line oblique, slightly excurved; orbicular and reniform indistinct, ill-defined, the former small, round, the latter moderate, defined by black below and on outer side; postmedial line sinuous, distinctly angled beyond the cell; subterminal line broad, diffused, remote from termen but nearly parallel to it; a distinct terminal series of dark spots. Hind wing whitish, tinged with fuscous towards termen; the underside white with dark irroration.

Hab. U.S.A., Montana. *Exp.* 34 millim. This species is unknown to me.

772. Agrotis annularis. (Plate LXXI. fig. 28.)

Axylia annularis, Saalm. Lep. Madag. p. 265 (1891).
Agrotis transjecta, Dist. A. M. N. H. (7) i. p. 220 (1898).

Head and thorax ochreous mixed with rufous, and the latter more or less strongly with black; palpi black at sides except at tips; abdomen brownish ochreous, with blackish lateral stripes. Fore wing ochreous slightly suffused with rufous; the veins and interspaces rather obscurely streaked with brown; a prominent diffused black streak in base of submedian fold; the antemedial line represented by a striga from costa and an indistinct line angled inwards on vein 1 and very strongly outwards above inner margin; orbicular and reniform small with pale annuli, the former round, the cell before and between them black, and with black streaks

from the reniform above and below vein 5 to termen; a postmedial series of black points on the veins bent outwards below costa, excurved to vein 4, then oblique; a dark patch on termen above tornus; a terminal series of black points; cilia chequered ochreous and black. Hind wing ochreous white, with interrupted brown terminal line; the underside with the costal area irrorated with brown, a small discoidal point and postmedial series on the veins.

Hab. Mashonaland, Salisbury (*Marshall*), 1 ♂; Transvaal, Pretoria, type † ♂ *transjecta* in Coll. Distant. Madagascar, Betsileo (*Cowan*), 1 ♂. *Exp.* 24–28 millim.

773. Agrotis dispalata. (Plate LXXI. fig. 29.)

Axylia dispalata, Swinh. Trans. Ent. Soc. 1891, p. 145; Hmpsn. Moths Ind. ii. p. 187.

Head and tegulæ ochreous; thorax fuscous; tibiæ and tarsi blackish with pale rings; abdomen greyish tinged with fuscous. Fore wing ochreous suffused with rufous and slightly irrorated with brown; the costal area suffused with black; the subbasal line represented by double black striæ from costa; slight brown streaks in, above, and below cell before the antemedial line, which is double, dentate, strongly angled outwards in submedian fold and above inner margin and inwards on vein 1; orbicular and reniform very small, with dark centres and pale annuli defined by black, the former round, the cell before and between them black; an oblique shade from lower angle of cell to inner margin; the postmedial line consisting of a treble series of points on the veins, bent outwards below costa, excurved to vein 4, then oblique; a dentate dark mark from termen above middle to the postmedial line, and a slight mark above tornus; a terminal series of black points. Hind wing ochreous white; the underside with the costal area slightly irrorated with brown.

Hab. Bombay, Poona (*Swinhoe*), 1 ♂, 1 ♀, type, Khandalla (*Swinhoe*), 1 ♀; Madras, Belgaum (*Watson*), 2 ♂. *Exp.* 28–30 millim.

774. Agrotis sicca. (Plate LXXI. fig. 30.)

Axylia sicca, Guen. Noct. i. p. 135 (1852).
Axylia renalis, Moore, P. Z. S. 1881, p. 341; Hmpsn. Moths Ind. ii. p. 187.

Head ochreous tinged with rufous; palpi, except at tips, and a bar across frons fuscous; tegulæ ochreous at base, with rufous medial band and dark tips; patagia rufous; thorax fuscous; pectus, legs, and abdomen pale fuscous, the last with pale ventral stripe. Fore wing ochreous; the costal area purplish fuscous; pale streaks on base of subcostal and median nervures and two in cell; the subbasal line represented by double striæ from costa and cell; the antemedial line indistinct, double, waved, very strongly angled inwards on vein 1 and outwards above inner margin; orbicular and

reniform purplish fuscous, small, defined by black and their centres by blackish, the former round, the cell before and between them black, continued as streaks above and below vein 5 to termen; an oblique waved shade from lower angle of cell to inner margin; the postmedial line double, dentate, and produced to a double series of points on the veins, bent outwards below costa, excurved to vein 4, then incurved; a terminal series of prominent black points and a fuscous mark above tornus; cilia intersected with black. Hind wing yellowish semihyaline white; the veins, costal and terminal areas tinged with brown; cilia pale ochreous; the underside with the costal area irrorated with brown, a discoidal point and post medial series of striæ on the veins of costal half.

Hab. C. Colony, Transkei (*Miss F. Barrett*), 1 ♀; Punjab, Simla (*Harford*), 1 ♂, 3 ♀ type, Dalhousie (*Harford*), 2 ♀, Dharmsála (*Hocking*), 4 ♂, 4 ♀, Kangra Valley, 4500′ (*Dudgeon*), 1 ♀; Sind. *Exp.* 32–36 millim.

775. Agrotis putris.

Noctua putris, Linn. Faun. Suec. p. 315 (1746); Esp. Schmett. iv. pl. 138. ff. 4, 5; Steph. Ill. Brit. Ent., Haust. ii. p. 172; Dup. Lép. Fr. vii. p. 168, pl. cxi. f. 3; Hampsn. Moths Ind. ii. p. 186; Staud. Cat. Lep. pal. p. 148.
Noctua subcorticalis, Hüfn. Berl. Mag. iii. p. 308 (1767).
Noctua lignosa, Hübn. Eur. Schmett., Noct. f. 245 (1827).
Axylia triseriata, Moore, P. Z. S. 1888, p. 409.

Head and tegulæ ochreous, the latter with slight rufous medial line and rufous tips; palpi rufous; thorax rufous mixed with black; abdomen brownish ochreous with dark lateral line. Fore wing ochreous, the costal area and cell suffused with dark red-brown; two fine pale streaks in basal part of cell; the subbasal line represented by two slight striæ from costa; a slight rufous streak above base of vein 1 bent upwards towards extremity; the antemedial line double, the inner line pale rufous, very highly dentate and angled outwards in the interspaces and inwards on the veins; orbicular and reniform small, with fuscous centres and ochreous annuli defined by brown, the former round, the latter with a grey S-shaped mark on it; an oblique pale rufous shade from lower angle of cell to inner margin; the postmedial line indistinct, double, dentate, and produced to a double series of black points on the veins, bent outwards below costa, excurved to vein 4, then oblique; some pale points on costa towards apex; rufous streaks above and below vein 5 from or from just beyond reniform to close to termen; a rufous mark above tornus and slight black dash on extremity of vein 2; a terminal series of black points; cilia intersected with brown, most prominently below apex and above tornus. Hind wing ochreous, the veins brownish, the terminal area tinged with brown; a terminal series of dark striæ; the underside with the costal area irrorated with fuscous, a small discoidal spot and curved postmedial line.

The form *triseriata* from Japan and N. India is rather darker.

Hab. Britain, Leech Coll.; France; Germany, Zeller & Frey

Colls.; Austria, Zeller Coll.; Hungary, Leech Coll.; Switzerland; N. Spain; Italy; Russia, Livonia, Zeller Coll.; Armenia; W. Siberia, Altai; Amurland, Ussuri; Corea; Japan, Yokohama (*Pryer*), 1 ♀, Hakodate (*Andrewes*), 2 ♀, Tokio (*Maries*), 1 ♀; China, Foo-chan (*Leech*), 1 ♂; Punjab, Dharmsála (*Hocking*), 3 ♂, 5 ♀, type *triseriata*; Sikkim (*Lidderdale, Dudgeon*), 2 ♀. *Exp.* 34–40 millim.

Larva. Meyr. Brit. Lep. p. 98; Barrett, Lep. Brit. iv. p. 3, pl. 137. f. 1.

Pale brown with darker irroration; dorsal line pale, interrupted; a subdorsal series of dark greenish-fuscous oblique marks, more prominent on somites 4, 5, 9, 10, edged below by pale ochreous; an ochreous bar on somite 11; spiracular line pale tinged with pinkish or yellowish; head brown with darker markings. Food-plants: *Stellaria, Atriplex, Plantago,* etc. 7–8.

776. Agrotis coniorta, n. sp. (Plate LXXI. fig. 31.)

Head and thorax ochreous or whitish largely mixed with black, sometimes tinged with reddish; tarsi with pale rings; abdomen greyish ochreous suffused with fuscous. Fore wing greyish ochreous, sometimes tinged with purplish red, and irrorated with fuscous; the subbasal line represented by double black striæ from costa and cell; a diffused black fascia below base of cell; a double waved antemedial line angled outwards below costa and above inner margin; claviform represented by a slight black streak; orbicular and reniform with fuscous centres and pale annuli defined by black, the former a small ocellus, a black fascia in cell before and between the stigmata; an oblique waved shade from lower angle of cell to inner margin; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line defined by a blackish patch with pale points on it on costa, before it and the area beyond it blackish, bent outwards to apex and excurved at middle; a terminal series of black points. Hind wing ochreous white, the veins and terminal area tinged with fuscous; a terminal series of black points; the underside with the costal area irrorated with fuscous, a discoidal point and somewhat dentate postmedial line.

Hab. Br. E. Africa, Masailand, El Quaso, 1 ♀, El Burgon (*Betton*), 6 ♂, 3 ♀ type, Lari 1 ♀. *Exp.* 26 millim.

*777. Agrotis effracta. (Plate LXXI. fig. 32.)

Agrotis effracta, Dist. A. M. N. H. (7) i. p. 220 (1898).

♂. Head and thorax brown with a purplish-grey gloss; tegulæ with black medial band; abdomen ochreous brown. Fore wing dull brown suffused with purplish fuscous, leaving the basal costal area, the inner medial area, and a diffused oblique band from apex to inner margin ochreous brown; traces of a waved antemedial line; orbicular and reniform small, defined by black, the former round, a black fascia between them continued in discal fold to termen; a

short fascia on terminal part of vein 6; postmedial line very indistinct, bent outwards below costa, then as an oblique series of points on the veins; the subterminal line represented by some obscure ochreous-brown spots on inner half; a terminal series of black points. Hind wing ochreous, the costal area tinged with brown; the underside with the costal area irrorated with brown, a slight discoidal point and postmedial series on the veins.

Hab. Transvaal, Pretoria (*Distant*), 1 ♂ type † in Coll. Distant. *Exp.* 32 millim.

*778. Agrotis talda.

Ochropleura talda, Schaus, Lep. Sierra Leone, p. 33, pl. iii. f. 1 (1893).

Head and thorax reddish and dark brown; abdomen brownish grey. Fore wing reddish brown tinged with grey and irrorated with fuscous; faint traces of the subbasal and antemedial lines; orbicular and reniform small, very distinct, with black patch between them in cell, and black streak from the reniform to subterminal line; postmedial line very indistinct, bent outwards below costa, excurved to vein 4, then incurved; traces of a pale subterminal line angled outwards at vein 7 and excurved at middle, defined on inner side by a dark patch at costa; a terminal series of dark points. Hind wing of male white, the cilia fuscous at apex; of female the whole wing suffused with fuscous; the underside with dark discoidal lunule and traces of curved, waved, postmedial line.

Hab. Sierra Leone; Cameroons (*Sjöstedt*), in Mus. Stockholm. *Exp.* 24–25 millim.

779. Agrotis cinctithorax. (Plate LXXII. fig. 1.)

Hadena cinctithorax, Wlk. xi. 591 (1857).

♂. Head and thorax rufous, the latter with broad blackish band behind the tegulæ; hind tibiæ and tarsi blackish banded with white; abdomen whitish tinged with ochreous. Fore wing pale rufous, slightly irrorated with black; the basal and costal areas more ochreous; the subbasal line represented by double striæ from costa and cell, the antemedial line by a double series of points on costa, veins, and inner margin; orbicular a small elongate black spot; reniform greyish, with a black streak across it; the postmedial line represented by a series of black points, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line only defined by blackish patches on its inner side at costa and middle; a terminal series of black points; cilia chequered rufous and black. Hind wing yellowish white, with terminal series of slight dark points; the underside with the costal area irrorated with fuscous, a discoidal point and curved postmedial series on the veins.

Hab. Cape Colony (*Sir A. Smith*), 1 ♂ type. *Exp.* 34 millim.

780. Agrotis catenifera. (Plate LXXII. fig. 2.)

Agrotis catenifera, Wlk. Tr. N. H. Soc. Glasg. i. p. 349 (1873).

♀. Head and thorax clothed with grey-brown and black scales; tegulæ with blackish streaks; abdomen pale brown, the ventral surface whitish. Fore wing grey-brown, slightly irrorated with fuscous; a slight diffused black streak in base of submedian fold; the antemedial line indistinct, waved; claviform elongate, black; orbicular and reniform defined by black, the former nearly round and with fuscous centre, the latter fuscous, the stigmata close together and connected by a fuscous streak; the postmedial line indistinct, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line represented by an oblique fuscous bar from costa, then by a series of black points on the veins; a terminal series of black points. Hind wing white, the veins and marginal areas suffused with brown.

Hab. W. Africa, Congo, 1 ♀ type. *Exp.* 42 millim.

781. Agrotis ravida.

Noctua ravida, Schiff. Wien. Verz. p. 80 (1776); Hübn. Eur. Schmett., Noct. f. 126; Godt. Lép. Fr. v. pl. 66. f. 6; Hmpsn. Moths Ind. ii. p. 187.
Noctua obducta, Esp. Schmett. Eur. iv. pl. 142. f. 4 (1786).
Noctua austera, Esp. Schmett. Eur. iv. pl. 142. f. 5 (1786).
Noctua bigramma, Esp. Schmett. Eur. iv. pl. 150. f. 2 (1786).
Noctua obscura, Brahm, Ins. Kal. ii. p. 191 (1791); Staud. Cat. Lep. pal. p. 136.
Graphiphora valida, Wlk. xxxiii. p. 711 (1865).
Agrotis stabulorum, Bienert, Disc. p. 34 (1870); Christ. Rom. Mém. ii. pl. xii. f. 5; Staud. Cat. Lep. pal. p. 136.
Agrotis nipona, Feld. Reis. Nov. pl. 110. f. 20 (1874).
Graphiphora caliginea, Butl. A. M. N. H. (5) i. p. 165 (1878).
Agrotis glis, Christ. Rom. Mém. iii. p. 64, pl. 3. f. 10 (1887); Staud. Cat. Lep. pal. p. 136.

♂. Head and tegulæ red-brown, the latter tipped with grey; thorax purplish brown mixed with grey; pectus and legs fuscous brown and grey; abdomen grey-brown. Fore wing pale purplish red-brown irrorated with grey and black, the veins grey irrorated with black; the subbasal line double, waved, from costa to submedian fold, a more or less prominent black streak from its lower extremity to the double, waved antemedial line, which is blackish filled in with grey; the orbicular and reniform with white-irrorated centres and greyish annuli more or less prominently defined by black, the former elliptical, a black streak often present before and between them in cell; traces of a waved medial line from lower angle of cell to inner margin; the postmedial line double, blackish, filled in with grey, dentate, and produced to points on the veins, slightly bent outwards below costa and incurved in discal fold, oblique below vein 4; the subterminal line greyish, angled outwards at vein 7 and dentate at veins 4 and 3; some pale points on costa towards apex; a terminal series of black points. Hind wing ochreous white, tinged with brown especially towards termen; the

veins brown; the underside white, the costal area irrorated with brown, a slight discoidal point, a black postmedial line on costal area, and series of slight streaks on the veins.

Ab. 1. *stabulorum*. Paler; fore wing without the basal black streak, the stigmata not defined.

Ab. 2. 2 ♀. Hing wing wholly brown.—Punjab; Thundiani.

Hab. Britain, Leech Coll.; France, Sand Coll.; Germany, Zeller Coll.; Switzerland; Italy; Russia, Livonia, Zeller Coll.; Armenia; Asia Minor, Pontus; Persia; N. Persia; W. Turkestan, Turcomania, Ferghana, Issyk-kul; E. Turkestan, Kuldja, 2 ♂, 1 ♀; Tibet, Amdo; Siberia; Amurland; Japan, Yokohama (*Pryer*), 3 ♂, 4 ♀, type *caliginea*, Oiwake (*Pryer*), 1 ♂, 1 ♀, Chiuzenji (*Lewis*), 1 ♀, Hakodate, 2 ♀, type † ♀ *nipona* in Coll. Rothschild; Corea, Gensan (*Leech*), 1 ♀; N. China, Shanghai (*Fortune*), 2 ♀ type *valida*; Kashmir, Dras (*Leech*), 2 ♂; Punjab, Thundiani (*Yerbury*), 2 ♀. *Exp.* 44–54 millim.

Larva. Meyr. Brit. Lep. p. 98; Barrett, Lep. Brit. iii. p. 386, pl. 136. f. 1.

Ochreous brown; dorsal line paler; a subdorsal series of curved, or sometimes nearly straight, oblique, yellowish marks, edged above with fuscous; head grey, with fuscous markings. Food-plants: *Taraxacum*, *Stellaria*, etc. 9–5.

782. Agrotis inopinata. (Plate LXXII. fig. 3.)

Noctua inopinatus, Smith, J. N. Y. Ent. Soc. vi. p. 103 (1898).

♂. Head and thorax fuscous brown; antennæ rufous; abdomen grey tinged with fuscous. Fore wing fuscous brown; an indistinct subbasal line from costa to submedian fold, angled outwards below costa; an indistinct oblique waved antemedial dark line angled outwards below costa and above inner margin, and with small wedge-shaped black marks on it in cell; orbicular and reniform prominently defined by black, the former round, the latter large; the postmedial line indistinct, dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex. Hind wing whitish suffused with pale fuscous, especially on terminal half; the underside with the costal and terminal areas irrorated with brown; a dark discoidal spot and sinuous postmedial line.

Hab. U.S.A., Colorado, 1 ♂. *Exp.* 46 millim.

783. Agrotis sierræ. (Plate LXXII. fig. 4.)

Agrotis sierræ, Haw. Can. Ent. viii. p. 37 (1876); Smith, Cat. Noct. N. Am. p. 75.

♂. Head and thorax brown, the scales tipped with greyish; palpi and legs irrorated with black; abdomen ochreous mixed with dark brown. Fore wing grey-brown irrorated with grey; a dark subbasal line from costa to submedian fold; the antemedial line indistinct, angled outwards below costa, then minutely waved and oblique; claviform indistinctly outlined with black; orbicular and

reniform outlined with black, the former round, open above, the latter with large blackish spot on its outer edge; the postmedial line dentate, with some pale scales on its outer edge, bent outwards below costa, excurved to vein 4, then incurved; an indistinct greyish subterminal line excurved below costa. Hind wing yellowish white, the veins and terminal area tinged with brown; the underside irrorated with brown, with discoidal spot and sinuous postmedial line.

♀. Abdomen darker; hind wing fuscous brown.

Hab. U.S.A., Colorado, 1 ♂, 1 ♀, California, Sierra Nevada, 1 ♀ type. *Exp.* 46–48 millim.

*784. Agrotis aucta.

Agrotis aucta, Alph. Rom. Mém. vi. p. 25, pl. 2. f. 3 (1892); Staud. Cat. Lep. pal. pp. 136, 254.

Head and thorax pale brownish grey, sometimes with a reddish tinge; abdomen brownish white. Fore wing brownish grey, sometimes with a slight reddish tinge; subbasal line represented by two slight striæ from costa; traces of a double, waved, antemedial line angled inwards on vein 1; claviform defined by a few dark scales at its extremity; orbicular and reniform large, slightly defined by fuscous, the former open above; postmedial line indistinct or nearly obsolete, dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then oblique; subterminal line defined by a dark shade on its inner side, angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of black points. Hind wing white, the veins and terminal half suffused with brown, the inner area with an ochreous tinge; cilia white; the underside white, the costal area irrorated with brown; a discoidal lunule and postmedial series of points on the veins.

Hab. Tibet, Kuku-noor, in Coll. Püngeler; W. China. *Exp.* 48 millim.

785. Agrotis squalida. (Plate LXXII. fig. 5.)

Agrotis squalida, Guen. Noct. i. p. 300 (1852); Staud. Cat. Lep. pal. p. 136.
Agrotis confinis, Staud. Stett. ent. Zeit. 1881, p. 422.

Head and thorax pale brown; abdomen brownish white. Fore wing brownish grey irrorated with dark brown; an indistinct waved subbasal line from costa to submedian fold; the antemedial line twice angled inwards in cell, excurved below cell and angled strongly inwards on vein 1; orbicular and reniform almost obsolete; traces of a medial shade; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; a slight subterminal shade, very slightly angled outwards at vein 7 and excurved at middle; a terminal series of points. Hind wing whitish suffused with pale brown, especially towards margins; veins brown; the underside whiter, with postmedial series of white points on the veins.

Other specimens have the head and thorax much darker; fore wing irrorated with fuscous, the antemedial line double, the clavi-

form slightly defined; the orbicular and reniform with fuscous centres and whitish annuli defined by black, the former oblique, elliptical; hind wing tinged with fuscous.

Hab. Russia, ? Urals; Armenia, Caucasus; N. Persia, Schakuh; W. Siberia, Altai; W. Turkestan, Turcomania, 1 ♂, 1 ♀, Tarbagatai Mts., Ala Tau, Issyk-kul, Ferghana; E. Turkestan, Ili; Mongolia, Uliassutai Mts., Changhai Mts.; Tibet, Kuku-noor. *Exp.* 46 millim.

786. Agrotis unimacula. (Plate LXXII. fig. 6.)

Agrotis unimacula, Morr. Proc. Bost. Soc. N. H. xvii. p. 166 (1874).
Agrotis haruspica, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 212 (1875); Smith, Cat. Noct. N. Am. p. 74.
Agrotis augur, var. *grandis*, Speyer, Stett. ent. Zeit. xxxvi. p. 122 (1875).

Head and thorax dull reddish brown, the scales with grey tips; palpi and legs mixed with fuscous; abdomen grey, thickly irrorated with fuscous. Fore wing grey-brown, irrorated with grey and fuscous; a waved black subbasal line from costa to submedian fold; an oblique waved antemedial line; claviform sometimes with its extremity defined by black scales; orbicular and reniform defined by black, the former oblique, U-shaped, open above, almost obsolete, the latter large, usually more or less open above and below and with black spot on its outer edge; the postmedial line highly dentate, strongly bent outwards below costa, excurved to vein 4, then incurved; a pale subterminal line angled outwards at vein 7 and excurved at middle, more or less strongly defined by fuscous suffusion on its inner edge; a terminal series of dark points. Hind wing yellowish brown; the cilia ochreous; the underside grey irrorated with brown, with dark discoidal spot and diffused sinuous postmedial line.

Hab. Canada, Norman, 1 ♂, Renfrew Co., 4 ♂, 2 ♀; Br. Columbia (*Kean*), 1 ♀; U.S.A., Northern and Eastern States, New York, 4 ♂, 4 ♀, type *haruspica*, Montana, Colorado, Utah. *Exp.* 46–54 millim.

787. Agrotis augur.

Noctua augur, Fabr. Sp. Ins. ii. p. 223 (1781); Hübn. Eur. Schmett., Noct. f. 148; Dup. Hist. Nat. Lép. Fr. vi. pl. 73. f. 6; Staud. Cat. Lep. pal. p. 136.
Noctua omega, Esp. Schmett. iv. pl. 131. f. 2 (1788).
Noctua assimulans, Bork. Eur. Schmett. iv. p. 209 (1790).
Noctua hippophaes, Hübn. Eur. Schmett., Noct. f. 782 (1827).
Agrotis abdita, J. Joan. Bull. Soc. Ent. Fr. 1891, p. 81; Mab. Nov. Lep. p. 128, pl. 18. f. 1.

Head and thorax reddish brown, the scales tipped with grey; palpi and legs irrorated with black; abdomen grey-brown, tinged with ochreous and irrorated with grey. Fore wing yellowish brown with a slight reddish or greyish tinge, and irrorated with fuscous; a waved subbasal line from costa to submedian fold; an oblique waved antemedial line; claviform outlined with black or more or less obsolete; orbicular and reniform outlined with black,

the former oblique, U-shaped, open above, the latter often open above or below, and with black spot on its outer edge; the postmedial line highly dentate, bent outwards below costa, excurved to vein 4, then incurved; a pale subterminal line, angled outwards below costa and excurved at middle, defined by fuscous suffusion on inner side; a terminal series of black points. Hind wing yellow-brown, with the cilia ochreous; the underside grey irrorated with brown, a dark discoidal lunule and sinuous postmedial line.

Hab. Britain; France; Germany, Zeller Coll.; Switzerland, Frey Coll.; Italy; Norway, Sondmöre, 1 ♀; Russia, Livonia, 1 ♀; Syria, type † ♀ *abdita* in Coll. Joanis; Amur; Japan. *Exp.* 46–50 millim.

Larva. Meyr. Brit. Lep. p. 96; Barrett, Lep. Brit. iv. p. 36, pl. 141. f. 3.

Purplish brown or greenish grey; a double dorsal series of white dots and oblique darker marks; spiracular line dark brown; somite 12 with transverse dark mark dilated at extremities, pale-edged posteriorly; head pale brown. Food-plants: *Salix*, *Rumex*, etc.

*788. Agrotis sibirica.

Agrotis sibirica, Boisd. Icones, pl. 80. f. 6 (1832); Staud. Cat. Lep. pal. p. 152.

♂. Head, thorax, and abdomen ochreous white mixed with brown. Fore wing grey-brown; the subbasal line represented by double striæ from costa and cell; the antemedial line double, oblique, waved, with more prominent spots at costa; claviform defined by black above and at extremity; orbicular and reniform large, defined by black, the former round, incomplete above and below, the latter with slight pale annulus; postmedial line double, strongly dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then oblique, some pale points on costa beyond it; subterminal line indistinct, pale, irregularly dentate, angled outwards at vein 7 and excurved at middle, defined on inner side by a slight series of dentate dark marks; a terminal series of small black lunules; a fine pale line at base of cilia. Hind wing fuscous brown, the cilia whitish with brown line at base; the underside pale suffused with brown, the costal area irrorated with brown, a dark discoidal point and traces of a curved postmedial line.

Hab. Siberia, type † ♂ in Coll. Oberthur; E. Sibera, Ussuri; Corea. *Exp.* 48 millim.

789. Agrotis jalapa, n. sp. (Plate LXXII. fig. 7.)

Ufeus satyricus, Druce, Biol. Centr.-Amer., Het. i. p. 266 (nec Grote).

Head and thorax red-brown mixed with black; legs blackish, the tarsi ringed with white; abdomen silky brown. Fore wing red-brown irrorated with black; the veins with blackish streaks; the submedian nervure with blackish streak stronger towards base; the subbasal line represented by double striæ on costa; the antemedial line double, waved, strongly angled inwards on median

nervure and vein 1, the inner line weak; orbicular and reniform obscurely defined by black and with black streak between them in lower part of cell; the postmedial line indistinct, dentate, bent outwards below costa, excurved to vein 4, then incurved; some blackish streaks in interspaces of terminal area; the subterminal line very indistinct, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points; cilia intersected with black, and with pale line at base. Hind wing pale brown; a fine dark terminal line and line at base of cilia; the underside whiter, the costal area irrorated with brown; a dark discoidal lunule and curved postmedial series of short streaks on the veins.

Hab. Mexico, Jalapa (*Hoege*), 1 ♂, 1 ♀ type, Godman-Salvin Coll. *Exp.* 50–54 millim.

790. Agrotis havilæ. (Plate LXXII. fig. 8.)

Agrotis clandestina, var. *havilæ*, Grote, Bull. Geol. Surv. vi. p. 157 (1880); Smith, Cat. Noct. N. Am. p. 76.

Head and tegulæ reddish brown, the latter tipped with grey; thorax and abdomen grey-brown mixed with grey. Fore wing grey-brown irrorated with grey and fuscous; a more or less developed black streak below base of cell; the double subbasal line only indicated at costa; the double antemedial line more or less strongly dentate, the dentitions increasing in length towards inner margin; claviform obsolete; orbicular and reniform more or less completely defined by black and either small or well-developed, the former longitudinally elliptical and sometimes connected with the reniform; the postmedial line minutely dentate, defined by grey on outer side, bent outwards below costa, then excurved to vein 4, and angled inwards in discal and submedian folds; the subterminal line indistinct, grey, angled outwards on veins 6, 4, and 3 and crossed by dark streaks on the veins; a terminal series of dark points. Hind wing brown; the cilia white with brown line at base; the underside greyer, with dark irroration on costal area and dark discoidal point.

Hab. U.S.A., Colorado (*Cockerell*), 3 ♀, Nevada, 1 ♂ type, S. California, 1 ♂, 3 ♀. *Exp.* 38–48 millim.

791. Agrotis lucens. (Plate LXXII. fig. 9.)

Spælotis lucens, Butl. Trans. Ent. Soc. 1881, p. 179.

♀. Head and thorax dark brown, the scales tipped with grey; legs blackish, the tarsi with pale rings; abdomen reddish brown irrorated with fuscous. Fore wing grey suffused with fuscous brown and irrorated with black; a double waved subbasal line from costa to submedian fold; a similar antemedial line filled in with greyish and angled inwards on vein 1; claviform very indistinct, greyish; orbicular and reniform with greyish annuli defined by black, the former small, round; postmedial line double, filled in with greyish, dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; a dentate grey subterminal line slightly angled outwards

at vein 7 and excurved at middle; a terminal series of black points. Hind wing fuscous brown with a slight reddish tinge; cilia greyish with a brown line at base; the underside grey irrorated with brown; a sinuous postmedial line and diffused subterminal band.

Hab. Japan, Tokio (*Maries*), 1 ♀ type. *Exp.* 42 millim.

792. Agrotis deplorata. (Plate LXXII. fig. 10.)

Agrotis deplorata, Staud. Iris, ix. p. 241 (1896); id. Cat. Lep. pal. p. 136.
Agrotis sennina, Staud. Iris, iv. p. 241 (1896).

Head and tegulæ grey; palpi fuscous except at tips; tegulæ with black bands near base and at extremity; thorax blackish, the scales slightly tipped with grey; abdomen grey irrorated with brown. Fore wing grey thickly irrorated with fuscous black; the subbasal line represented by two oblique striæ from costa; a black streak below cell from near base to the indistinct double, waved, antemedial line which is angled outwards above inner margin; claviform represented by slight black marks at its base and extremity; orbicular and reniform small, rounded, greyish, with slight pale annuli defined by black with some black suffusion in cell before and between them; the postmedial line indistinct, double, dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line obscurely defined by fuscous on inner side, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing grey suffused with fuscous brown; the cilia white, with brownish line at base; the underside whitish irrorated with brown, a slight discoidal spot and curved postmedial line.

Ab. 1. *sennina*. Head and tegulæ browner; fore wing darker.

Hab. Mongolia, Uliassutai Mts., 1 ♂, 1 ♀. *Exp.* 44 millim.

793. Agrotis senna.

Noctua senna, Geyer, Samml. Eur. Schmett. i. ff. 771–2 (1827); Boisd. Icones, pl. 77, f. 4; Dup. Lép. Fr. Suppl. iii. p. 183, pl. 18. f. 2; Staud. Cat. Lep. pal. p. 136.
Agrotis valdensis, Boisd. Ind. Meth. p. 63 (1829).

Head and tegulæ reddish brown mixed with grey, the latter with medial black band; thorax black-brown mixed with grey; tarsi with white rings; abdomen grey-brown, ventrally grey irrorated with brown. Fore wing brown thickly irrorated with grey; a double, waved, subbasal line from costa to submedian fold, where there is a black streak from it to the double, waved, antemedial line; claviform small, slightly defined by black and grey or almost obsolete; orbicular and reniform grey defined by black, the former round, a black fascia or suffusion in the cell before and between them; the postmedial line black, defined by grey on outer side, minutely dentate, and produced to grey points on the veins, slightly bent outwards below costa, angled inwards in discal fold to the reniform and incurved below vein 4; the subterminal line grey, minutely dentate, angled outwards at vein 7 and excurved at

middle, the veins beyond it streaked with grey; some white points on costa towards apex. Hind wing fuscous brown; the cilia white with brown line at base; the underside white, the terminal area suffused with brown, the costal area irrorated with brown, a slight discoidal spot and diffused sinuous postmedial line.

Hab. E. France; S.W. Germany; Switzerland, Valais, Zeller, Frey, & Leech Colls. *Exp.* 34–40 millim.

*794. Agrotis clemens. (Plate LXXII. fig. 11.)

Agrotis clemens, Smith, Trans. Am. Ent. Soc. xvii. p. 44 (1890); id. Cat. Noct. N. Am. p. 75.

♀. Head and thorax dark brown pencilled with ochreous; abdomen pale grey-brown. Fore wing pale luteous brown strongly irrorated with black; a double, waved, subbasal line from costa to submedian fold; a double, waved, black antemedial line more strongly angled outwards in submedian fold; a black discoidal spot; two slight fuscous spots beyond angles of cell; a slight waved medial shade from cell to inner margin; a strongly dentate postmedial line produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; a pale subterminal line, slightly angled outward at vein 7 and excurved at middle, with a series of fuscous spots on its inner edge; a terminal series of black points; cilia with a dark line through them. Hind wing pale brown; cilia whitish; the underside paler with dark discoidal point, a slightly sinuous postmedial line and diffused subterminal line.

Hab. U.S.A., California, Placer Co., in Coll. Schaus. *Exp.* 44 millim.

Genus METALEPSIS.

	Type.
Metalepsis, Grote, Check List Noct. p. 25 (1875)	*cornuta.*

Proboscis well developed; palpi oblique, fringed with long hair in front; frons smooth; eyes rounded, strongly ciliated; antennæ of male pectinate with rather short branches; frons and vertex of head with tufts of hair; thorax clothed with hair, tegulæ forming a dorsal ridge, pro- and metathorax with crests; tibiæ strongly spined; abdomen fringed with long hair at sides. Fore wing rather narrow, the apex produced; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

795. Metalepsis cornuta.

Pachnobia cornuta, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 68 (1874); Smith, Cat. Noct. N. Am. p. 210.

♂. Head and thorax purplish rufous; vertex of head and tegulæ dirty white, the latter with black line at base and brown medial line; tarsi with pale rings; abdomen pale strongly irrorated with black-brown, the hair at sides, anal tuft, and ventral surface rufous. Fore wing purplish rufous, the costal and terminal areas suffused

with lilacine grey; the subbasal line represented by a black striga on costa and slight streaks on median nervure and in submedian fold; the antemedial line grey defined by brown on outer side, with black striga at costa, angled slightly outwards below costa and inwards in cell, then excurved to vein 1 where it is angled strongly outwards; claviform obsolete; orbicular and reniform irrorated with white, with whitish annuli defined by blackish, the former elongate and confluent with the reniform; the postmedial line grey defined by brown, minutely waved, with two black strigæ at costa,

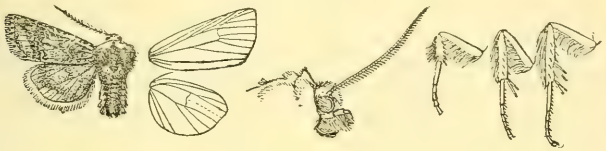


Fig. 79.—*Metalepsis cornuta*, ♂. ½.

bent strongly outwards below costa, excurved to vein 4, then incurved; the subterminal line defined by brown on inner side and by an oblique black bar at costa, with black point and short streak below it, then by fuscous streaks on the veins, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pale purplish suffused with fuscous, with obscure discoidal spot and diffused postmedial band; the underside purplish red irrorated with white and fuscous, a dark discoidal spot and curved minutely waved postmedial line.

Hab. U.S.A., California, 1 ♂ type. *Exp.* 32 millim.

Genus EUCOPTOCNEMIS.

Type.

Eucoptocnemis, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 13 (1874), non descr. ..... *fimbriaris.*

Proboscis rather aborted, small; palpi upturned to about vertex of head, the 2nd joint fringed with long hair in front, the 3rd moderate; frons smooth; eyes large, rounded; antennæ of male bipectinate with long branches to apex; head and thorax clothed with long hair; fore tibiæ short and broad, with long curved claw on inner side and short claw on outer, spined at sides; mid and hind tibiæ strongly spined. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

Sect. I. Fore wing narrow, the costa concave, the apex produced upwards.

796. Eucoptocnemis stenistis, n. sp.

♂. Head and thorax white and reddish brown, the scales tipped with white; abdomen grey tinged with brown. Fore wing grey

irrorated with brown; the costa dark; patches of blackish scales on basal inner area and at end of cell. Hind wing white, the costal

Fig. 80.—*Eucoptocnemis stenistis*, ♂. ½.

and terminal areas tinged with brown; the underside with discoidal spot and curved postmedial series of points on the veins.

Hab. Chili, Coquimbo (*J. J. Walker*), 1 ♂ type. *Exp.* 16 millim.

Sect. II. Fore wing broad, with the costa not concave.

A. Fore wing with the antemedial line double, filled in with whitish ..... *fimbriaris.*

B. Fore wing with the antemedial line single ..... *tripars.*

797. Eucoptocnemis fimbriaris.

Heliophobus fimbriaris, Guen. Noct. i. p. 172 (1852); Smith, Cat. Noct. N. Am. p. 109.

Graphiphora obvia, Wlk. xv. 1707 (1858).

♂. Head and thorax grey, the hairs tipped with dark brown and white; sides of palpi and frons blackish; abdomen brownish grey.

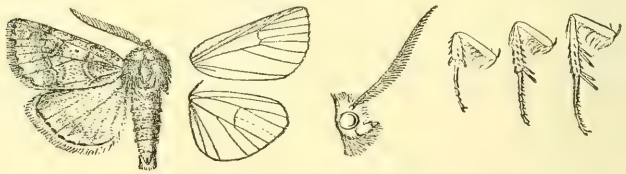


Fig. 81.—*Eucoptocnemis fimbriaris*, ♂. ½.

Fore wing grey irrorated with brown scales; the subbasal line represented by double striæ at costa and below cell; the antemedial line double, minutely waved, oblique from costa to median nervure where it is angled; claviform absent; orbicular represented by a black point; reniform a narrow ochreous bar with blackish line at centre and diffused black outline; the postmedial line white defined on each side by blackish, slightly bent outwards below costa, then reduced to small spots on the veins and oblique below vein 4; a waved subterminal line with the area beyond it greyer, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing whitish, with diffused subterminal brown

band, or the whole terminal area suffused with brown; the underside with discoidal point and postmedial series of striæ on the veins.

Ab. 1. *obvia*. Colour much more rufous.

Hab. U.S.A. (*Doubleday*), 3 ♂, type and type *obvia*, Massachusetts. *Exp.* 40 millim.

798. Eucoptocnemis tripars. (Plate LXXII. fig. 12.)

Mythymna tripars, Wlk. ix. 78 (1856), ♀; Smith, Cat. Noct. N. Am. p. 86.
Agrotis worthingtoni, Grote, N. Am. Ent. i. p. 91 (1880), ♂.

♂. Head and thorax grey tinged with brown; side of palpi and frons blackish; antennæ reddish brown; abdomen grey, with a fuscous dorsal band on subterminal segment. Fore wing grey irrorated with fuscous; subbasal black points below costa and cell; the antemedial line indistinct, and somewhat excurved below the cell; the orbicular and reniform whitish defined by black, the former hardly more than a point, the latter much constricted at middle; the postmedial line indistinct, dentate, with minute black streaks on the veins ending in white points, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line very indistinct and slightly angled outwards at vein 7; a terminal series of black points. Hind wing white irrorated with brown; a dark terminal punctiform line; the underside with the costal area slightly irrorated with brown, a discoidal point and postmedial series of short streaks on the veins.

♀. Head, thorax, and fore wing with the ground-colour chestnut; abdomen suffused with brown; hind wing brown except the cell and just beyond it.

Hab. U.S.A. (*Doubleday*), 1 ♀ type, N. York, Indiana, 1 ♂, type *worthingtonii*. *Exp.* 34 millim.

Genus **ONYCHAGROTIS**, nov.

Type, *O. rileyana*.

Proboscis fully developed; palpi oblique, fringed with long hair; frons smooth, without prominence; eyes large, rounded; antennæ of male bipectinate to apex with moderate branches; head and thorax clothed with rough scales and hair, the pro- and metathorax with slight crests; fore tibiæ rather short and broad, with two claws on inner side and seven claws on outer, diminishing in length towards base; mid and hind tibiæ strongly spined. Fore wing rather broad, the apex rounded; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

799. Onychagrotis rileyana.

Agrotis rileyana, Morr. Proc. Bost. Soc. N. H. xvii. p. 166 (1874); Smith, Cat. Noct. N. Am. p. 86.

♂. Head and thorax grey, tinged with brown and irrorated with black; palpi black at sides; antennæ with the shaft whitish above, the branches rufous; tarsi banded with black; abdomen grey, with brownish dorsal bands. Fore wing pale brownish, thickly irrorated

with fuscous; the subbasal line double, waved, from costa to submedian fold; the antemedial line double, waved, and bent outwards above inner margin; claviform small, fuscous defined by black; orbicular and reniform fuscous, with greyish annuli defined by black, the former rounded; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; the

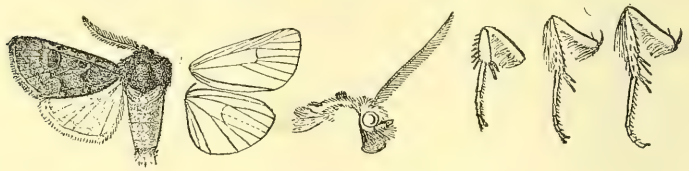


Fig. 82.—*Onychagrotis rileyana*, ♂. ½.

subterminal line indistinct, pale, waved, and slightly angled outwards at vein 7; a terminal series of black points. Hind wing white, the veins and termen tinged with brown; the underside with slight discoidal lunule.

♀. Greyer; hind wing with the terminal area suffused with fuscous brown.

Hab. U.S.A., N. York, Illinois, 1 ♀, Missouri, Kansas, Colorado, California (*Behrens*), 1 ♂ type, New Mexico. *Exp.* 38 millim.

Genus **PSEUDORTHOSIA.**

Type.

Pseudorthosia, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 161 (1874) ... *variabilis*.

Proboscis fully developed; palpi upturned, fringed with hair in front; frons with slight roughened prominence; eyes large, round, naked; antennæ of male minutely biserrate and fasciculate; head and thorax clothed with long hair and without crests; tibiæ strongly spined; abdomen dorsally clothed with long hair at base. Fore wing with veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

800. **Pseudorthosia variabilis.**

Pseudorthosia variabilis, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 161 (1874); Smith, Cat. Noct. N. Am. p. 211.

Head and thorax pale ochreous, rufous, or dark brown; sides of palpi and frons blackish; abdomen ochreous, with the hair at base whitish, the ventral surface and legs irrorated with dark brown. Fore wing ochreous or rufous irrorated with dark brown, and sometimes suffused with fuscous brown; the subbasal line sometimes represented by dark points below costa and cell; the antemedial line well developed or obsolete, angled outwards below costa and cell and inwards in cell and on vein 1; the orbicular a small pale-edged oblique dark lunule, sometimes almost obsolete; a diffused medial line excurved from costa to median nervure, then oblique;

the reniform a pale-edged, dark, bar-shaped mark; the postmedial line with pale outer edge, excurved from costa to vein 4, then incurved; a pale subterminal line defined by fuscous on inner side, and with dark mark at costa, angled outwards at vein 7 and excurved at

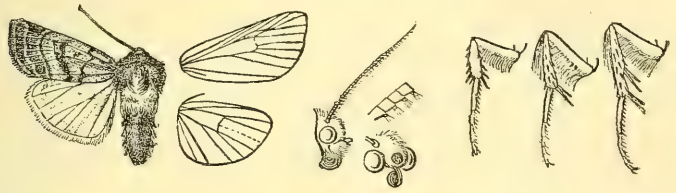


Fig. 83.—*Pseudorthosia variabilis*, ♂. ½.

middle; a series of black terminal points. Hind wing ochreous white, often tinged with brown; a dark discoidal spot and more or less distinct diffused subterminal band; a terminal series of dark points.

Hab. Canada, Vancouver I. (*J. J. Walker*), 1 ♂, 1 ♀; U.S.A., Colorado, California, Sanszalito, 3 ♂, 3 ♀, type. *Exp.* 44 millim.

Genus **EPISILIA**.

	Type.
Episilia, Hübn. Verz. p. 210 (1827)	*latens.*
Pachnobia, Guen. Noct. i. p. 341 (1852)	*tecta.*
Cyrebia, Guen. Noct. ii. p. 195 (1852)	*luperinoides.*
Psaphara, Wlk. xi. 607 (1857)	*interclusa.*
Oxira, Wlk. xxxii. 656 (1865)	*ochracea.*
Choephora, Grote, Trans. Am. Ent. Soc. ii. p. 199 (1868)	*fungorum.*
Raddea, Alph. Hor. Soc. Ent. Ross. xxvi. p. 450 (1892)	*digna.*
Ammogrotis, Staud. Iris, viii. p. 358 (1895)	*suavis.*

Proboscis fully developed; palpi obliquely upturned, clothed with long hair; frons smooth; head and thorax clothed with long hair; fore tibiæ spined at sides; mid and hind tibiæ spined. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

Sect. I. (*Psaphara*). Antennæ of male bipectinate, with rather long branches to apex.

A. Fore wing with black streak below base of cell.
  a. Fore wing with the orbicular large, open above.
    a^1. Fore wing with distinct subterminal line ..... *hyperborea.*
    b^1. Fore wing with the subterminal line absent ..... *gravida.*
  b. Fore wing with the orbicular small, entire.
    a^1. Fore wing with the orbicular oblique, elliptical ..... *perdita.*
    b^1. Fore wing with the orbicular elongate, elliptical ..... *bicolor.*
  c. Fore wing with the orbicular and reniform absent ..... *typhlina.*
B. Fore wing without black streak below base of cell.
  a. Fore wing with the lines dentate.
    a^1. Fore wing with the ground-colour greyish brown.
      a^2. Fore wing with quadrate blackish patch in cell between the stigmata ..... *oblongula.*
      b^2. Fore wing with rufous streak in cell and discal fold. *dissociata.*
      c^2. Fore wing with black spot in cell between the stigmata. *interclusa.*

b^1. Fore wing dark red-brown, the veins streaked with grey ..... *coppingeri.*
c^1. Fore wing bright rufous ..... *frigida.*
b. Fore wing with the lines non-dentate.
a^1. Fore wing with blackish patch in cell between the stigmata.
a^2. Fore wing grey, the lines white ..... *hilaris.*
b^2. Fore wing pale red, the lines dark ..... *fungorum.*
b^1. Fore wing without blackish patch in cell, the reniform dark.
a^2. Fore wing pale red; hind wing whitish.
a^3. Fore wing with distinct subterminal line ..... *madida.*
b^3. Fore wing without subterminal line ..... *molepa.*
b^2. Fore wing yellow; hind wing black-brown ..... *straminea.*

801. Episilia hyperborea.

Hadena hyperborea, Zett Ins. Lapp. p. 938 (1840); Guen. Noct. i. p. 342, pl. 4. f. 10; Mill. Icon. Lep. pl. 60. ff. 3, 4; Staud. Cat. Lep. pal. p. 137.
Hadena aquilonaris, Zett. Ins. Lapp. p. 940 (1840).
Hadena alpicola, Zett. Ins. Lapp. p. 938 (1840).
Agrotis alpina, Humph. & Westw. Brit. Moths, i. p. 118, pl. 23. f. 13 (1843).
Agrotis carnica, Herring, Stett. e. Zeit. 1846, p. 236.
Orthosia glacialis, Herr.-Schäff. Schmett. Eur., Noct. ff. 421–5 (1849).
Agrotis iveni, Hüber, Hor. Soc. Ent. Ross. vi. p. 135, pl. 3. f. 6 (1869).

Head and thorax grey mixed with brown; palpi blackish at sides except at extremity; abdomen grey irrorated with fuscous, the anal tuft tinged with rufous. Fore wing violaceous grey; a diffused black streak below base of cell; a waved subbasal line from costa to submedian fold; the antemedial line slightly angled outwards below costa and excurved below cell and above inner margin; claviform defined by black at extremity; orbicular large, whitish, defined by black, the former open above, the latter with fuscous centre, the cell before and between them blackish; an oblique waved line from lower angle of cell to inner margin; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique and angled inwards in submedian fold; the subterminal line defined by diffused somewhat dentate black marks on its inner edge, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing fuscous brown; the cilia white; the underside white, irrorated with brown; a dark discoidal lunule and indistinct sinuous postmedial line.

Ab. 1. *carnica*. Fore wing suffused with ferruginous.—Alps; Carinthia.

Ab. 2. *alpina*. Fore wing tinged with pink and suffused with rufous, the interspaces below and beyond cell with diffused black streaks.—Shetland; Scotland; Ireland.

Hab. Britain, Shetland, 3 ♂, 1 ♀, Scotland, 1 ♂, Ireland; Germany, Silesia; Hungary; Carinthia; Switzerland, Engadine, 1 ♂, 3 ♀; Scandinavia, Lapland, 4 ♂, 5 ♀; Russia, Amur, Leech Coll., 1 ♂, 1 ♀. *Exp.* 34–40 millim.

Larva. Meyr. Brit. Lep. p. 107; Barrett, Lep. Brit. v. p. 231, pl. 215. f. 1.
Brown-red, striated with black; a dorsal series of rather V-shaped patches composed of striations; dorsal and subdorsal lines ochreous, partly black-edged above; spiracular line indistinct, pale; head brown. Food-plants: *Empetrum*, *Arbutus*, *Vaccinium*. 8–6.

802. Episilia gravida.

Agrotis gravida, Mab. Bull. Soc. Philom. ix. 1885, p. 59; id. Miss. Scient. Cap Horn, vi. Lép. p. 15, pl. ii. f. 4.

Head and thorax olive-brown; palpi with the 2nd joint black at sides; legs mostly fuscous; abdomen black, mixed with rufous. Fore wing olive-brown; a rufous and black fascia below basal half of cell attenuate at extremities; the subbasal line represented by a striga from costa, the antemedial line by strigæ from costa and median nervure; the orbicular and reniform concolorous, defined by black in the cell before and between them and a rufous patch with blackish streaks beyond the latter; some black points on costa towards apex and a terminal series. Hind wing fuscous brown, with dark maculate terminal line; the underside grey-brown, with black discoidal lunule and traces of a curved post-medial line.

Hab. Patagonia, Straits of Magellan, Port Charrua (*J. J. Walker*), 1 ♂; Tierra del Fuego, type † ♀ in Mus. Paris. *Exp.* 44 millim.

*803. Episilia perdita. (Plate LXXII. fig. 13.)

Agrotis perdita, Staud. Hamburg. Magalhaens. iv. p. 55 (1899).

♂. Head and tegulæ pale rufous; thorax dark rufous; pectus, legs, and abdomen grey-brown, the anal tuft rufous. Fore wing rufous; the costal area greyish to the postmedial line; the cell and a patch below its base dark brown; the subbasal and antemedial lines represented by brown striæ from costa; median nervure streaked with grey; orbicular and reniform grey and conjoined to costal area, the former small, oblique, elliptical; an oblique brown medial line from lower angle of cell to inner margin; postmedial line indistinct, defined by greyish on outer side, minutely waved, bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by an indistinct series of dark points; a terminal series of dark points. Hind wing grey suffused with brown; the underside grey irrorated with brown, a dark discoidal spot.

Hab. Tierra del Fuego, Rio Grande (*Ohlin*), type † ♂ in Mus. Stockholm. *Exp.* 34 millim.

804. Episilia bicolor.

Agrotis bicolor, Mab. Bull. Soc. Philom. (7) ix. p. 59 (1885); id. Miss. Sci. Cap Horn, vi. Lép. p. 17, pl. ii. f. 1.

♂. Head, thorax, and abdomen red-brown, thorax with some

grey hairs. Fore wing deep red-brown, the costal area to postmedial line and veins rather paler; some diffused black below base of cell; orbicular and reniform small, pale, the former elongate, elliptical, the cell before and between them black; traces of a postmedial line bent outwards below costa, excurved to vein 4, then incurved; the subterminal line angled outwards at vein 7 and excurved at middle, defined by the area beyond it being greyer; a terminal series of black points. Hind wing fuscous brown, the cilia ochreous. Underside fuscous brown.

♀. Fore wing with the costal area much greyer to the postmedial line, the orbicular larger and confluent with costal area.

Hab. Patagonia, Sts. of Magellan, Port Charrua (*J. J. Walker*), 1 ♂; Tierra del Fuego, type † in Mus. Paris. *Exp.* 38 millim.

805. Episilia typhlina.

Agrotis typhlina, Mab. Bull. Soc. Philom. ix. 1885, p. 58; id. Miss. Scient. Cap Horn, vi. Lép. p. 12, pl. ii. f. 5.

♂. Head and thorax olive-brown to red-brown; palpi blackish at sides; tegulæ whitish in front, with medial black band; abdomen rufous irrorated with black. Fore wing olive-brown; a rufous and black fascia below base of cell, attenuate at extremities; a fascia in lower part of cell from before middle to lower angle; a fascia above inner margin from near base to beyond middle, with another above vein 1 from before middle to termen; slight dark marks above bases of veins 2 to 4, and a series of dentate black marks just before termen. Hind wing fuscous brown. Underside olive-brown tinged with fuscous.

Hab. Patagonia, Straits of Magellan, Puerto Bueno (*Coppinger*), 2 ♂. *Exp.* 40 millim. Type † in Mus. Paris.

*806. Episilia oblongula.

Noctua quadrangula, Ev. Bull. Mosc. 1844, iii. p. 592, pl. 14. f. 2 (nec Zett. 1840); Herr.-Schäff. Schmett. Eur., Noct. f. 496.
Agrotis oblongula, Staud. Cat. Lep. pal. p. 137 (1901).

♂. Head and thorax grey-brown with a slight reddish tinge; abdomen grey-brown. Fore wing grey-brown with slight dark irroration; the antemedial line very indistinct, with dark spot on costa, oblique to median nervure, where it is angled; claviform obsolete; orbicular and reniform only defined by a rectangular black-brown patch between them in cell; postmedial line very indistinct, with dark spot at costa, bent outwards below costa, excurved to vein 4, then incurved, some pale points beyond it on costa; faint traces of a subterminal line; cilia dark brown. Hind wing pale grey-brown.

Hab. Russia, Urals; ? Armenia; W. Turkestan, Ala Tau; Mongolia, Urga, in Coll. Oberthur. *Exp.* 42 millim.

*807. Episilia dissociata. (Plate LXXII. fig. 14.)

Agrotis dissociata, Staud. Hamburg. Magalhaens. iv. p. 58 (1899).

♂. Head and thorax reddish brown mixed with whitish; tegulæ with black medial line; abdomen brownish grey, the anal tuft ochreous. Fore wing grey mixed with dark brown, the costa, cell, and submedian fold to postmedial line rufous; a waved subbasal line from costa to submedian fold; antemedial line rather ill-defined, angled outwards below costa and cell and above inner margin; claviform absent; orbicular and reniform small, with slight dark centres and grey annuli defined by black, the former somewhat elliptical; postmedial line indistinct, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by a series of slight dentate dark marks. Hind wing whitish, suffused with fuscous; cilia yellowish white; the underside paler, with dark discoidal point and curved diffused postmedial line.

Hab. Patagonia, Magellan, Punta Arenas (*Nordenskiöld*), type † ♂ in Mus. Stockholm. *Exp.* 34 millim.

808. Episilia interclusa.

Psaphara interclusa, Wlk. xi. 607 (1857).

♂. Pale grey-brown; palpi with the 2nd joint tinged with fuscous at sides, thorax with fuscous mixed. Fore wing irrorated with fuscous; the subbasal line represented by black marks below costa and cell; the antemedial line angled inwards in cell and on

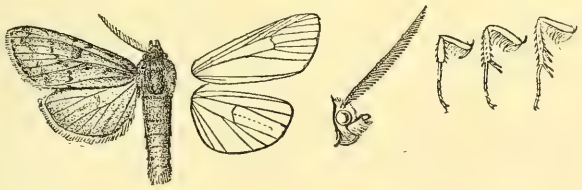


Fig. 84.—*Episilia interclusa*, ♂. ½.

vein 1, almost obsolete except for black spots below costa and cell and a short curved part from latter to submedian fold; the stigmata obsolete, with a somewhat quadrate black mark in cell between orbicular and reniform, with a black point on costa above it; the postmedial line represented by a series of small black lunules, strongly bent outwards below costa and strongly incurved below vein 4; a diffused fuscous subterminal shade angled outwards at vein 7 and excurved at middle; a terminal series of points. Hind wing pale, tinged with yellow-brown especially towards termen; a terminal series of dark striæ.

Hab. N.W. Coast of America (*Kellett & Wood*), 1 ♂ type. *Exp.* 44 millim.

809. Episilia coppingeri. (Plate LXXII. fig. 15.)

Pachnobia coppingeri, Butl. P. Z. S. 1881, p. 84.

Head and thorax red-brown; tarsi with pale rings; abdomen red-brown mixed with black. Fore wing deep red-brown, the costal area rather paler rufous to the postmedial line; the veins with pale streaks; indistinct waved subbasal and antemedial dark lines, the former ending at submedian fold; claviform small, greyish; orbicular and reniform pale, the former elliptical, the latter small; traces of an oblique medial shade from lower angle of cell to inner margin; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line defined by dentate dark brown marks on its inner side, angled outwards at vein 7 and excurved at middle; a terminal series of dark points. Hind wing fuscous brown, with terminal series of dark striæ; the underside whiter, with black discoidal lunule and curved postmedial line.

Hab. Patagonia, Straits of Magellan, Puerto Bueno (*Coppinger*), 1 ♂ type. *Exp.* 40 millim.

810. Episilia frigida.

Agrotis frigida, Mab. Bull. Soc. Philom. 1885, p. 61; id. Miss. Sci. Cap Horn, vi. Lép. p. 14, pl. ii. f. 2.

♂. Head and thorax bright rufous; mid and hind legs fuscous brown. Fore wing bright rufous, suffused with violaceous grey except on medial area, the terminal area irrorated with a few dark scales; the subbasal line red-brown, waved from costa to submedian fold; the antemedial line slightly waved and strongly angled inwards on vein 1; the orbicular and reniform defined by whitish, the former small, its upper edge produced to a point on outer side; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique and incurved in submedian interspace; the subterminal line only defined by the area beyond it being rather more violaceous; a terminal series of black points. Hind wing greyish, suffused with dark reddish brown; cilia reddish; the underside with dark discoidal lunule and curved sinuous postmedial line.

Hab. Patagonia, Mayne Harbour (*J. J. Walker*), 1 ♂, Orange Bay. *Exp.* 44 millim. Type † in Mus. Paris.

811. Episilia hilaris. (Plate LXXII. fig. 16.)

Agrotis hilaris, Grote, Can. Ent. xii. p. 153 (1880).
Agrotis bollii, Grote, Bull. Geol. Surv. vi. p. 160 (1883); Smith, Cat. Noct. N. Am. p. 67.

♂. Head and thorax clothed with grey and dark brown hair, tipped with white; palpi black, tipped with whitish; tegulæ with blackish medial band; tarsi black, ringed with white; abdomen grey-brown. Fore wing grey-brown irrorated with white; the antemedial line whitish, oblique, slightly sinuous; claviform repre-

sented by a small black spot; orbicular and reniform small, black, defined by white, the former confluent with the antemedial line, the latter quadrate; the postmedial line whitish, slightly curved, the area beyond it darker. Hind wing grey-brown, paler and tinged with ochreous towards base; the cilia white, brown at base. Underside of both wings brown, irrorated with white, an indistinct postmedial line.

Hab. U.S.A., Texas, 1 ♂ type. *Exp.* 38 millim.

812. **Episilia fungorum.** (Plate LXXII. fig. 17.)

Choephora fungorum, Grote, Trans. Am. Ent. Soc. ii. p. 200, pl. 3. f. 74 (1868); Smith, Cat. Noct. N. Am. p. 211.

♂. Head and thorax purple-red mixed with grey; antennæ and abdomen bright ochreous. Fore wing ochreous, suffused with pale purplish red; a fine blackish antemedial line oblique from costa to below cell, where it is obtusely angled; a quadrate blackish spot in end of cell; postmedial line oblique from costa to vein 6, where it is obtusely angled, then inwardly oblique. Hind wing ochreous suffused with purplish red, especially on terminal half; a curved fuscous postmedial line.

Hab. U.S.A., Eastern, Middle, and Central States (*Lewis*), 1 ♂. *Exp.* 48 millim.

*813. **Episilia madida.** (Plate LXXII. fig. 18.)

Mesogona madida, Guen. Noct. i. p. 404, pl. 7, f. 3 (1852).
Agrotis perotensis, Schaus, J. N.Y. Ent. Soc. vi. p. 107 (1898).

♀. Head and thorax rufous, the hair tipped with ochreous; antennæ whitish, sides of palpi except at tips and frons black; abdomen ochreous tinged with rufous. Fore wing pale rufous, with slight dark irroration; an indistinct straight oblique subbasal line from costa to median nervure; an indistinct straight oblique antemedial line; orbicular and reniform yellow-brown with pale annuli, the former oblique, oblong, the latter moderate, rather constricted at middle; postmedial line indistinct, pale, with series of dark points on the veins, excurved from costa to vein 4, then incurved; the subterminal line pale, defined by brown on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of minute dark lunules and two fine brown lines through the cilia. Hind wing semihyaline white, the veins brownish; the cilia rufous; the underside with small discoidal spot, the costal area irrorated with rufous.

Hab. Mexico, type † ♀ in Mus. Paris, Las Vegas, type † ♀ *perotensis* in Coll. Schaus. *Exp.* 46 millim.

*814. **Episilia molepa.** (Plate LXXII. fig. 19.)

Agrotis molepa, Schaus, J. N.Y. Ent. Soc. vi. p. 108 (1898).

♂. Head and thorax bright rufous, the scales greyish at tips; abdomen whitish. Fore wing bright rufous, slightly irrorated

with fuscous; the antemedial line represented by blackish spots on costa, median nervure, and vein 1; claviform and orbicular obsolete; reniform very small, with blackish outline; the postmedial line represented by a series of small black spots on the veins, excurved from costa to vein 4, then oblique; a series of black points on costa towards apex and termen. Hind wing pure white; the underside with some brown irroration on costal area, a discoidal point, and some points on termen towards apex.

Hab. Brazil, Castro Paraña, type † ♂ in Coll. Schaus. *Exp.* 40 millim.

815. Episilia straminea. (Plate LXXII. fig. 20.)

Heliothis straminea, Leech, Trans. Ent. Soc. 1900, p. 24.

♂. Head and thorax ochreous, slightly tinged with rufous; antennæ dark red-brown; abdomen ochreous, ventrally tinged with pink towards extremity. Fore wing ochreous; the costal edge brown; antemedial red-brown points on the veins; reniform prominent, brown, placed on an obsolescent oblique brown line expanding into a patch on inner margin; the postmedial line represented by a very indistinct series of points on the veins, excurved from costa to vein 4, then oblique, a more prominent spot on inner margin; the subterminal line represented by an oblique bar from costa, then by a series of obsolescent spots in the interspaces; a fine terminal brown line; cilia pinkish at tips. Hind wing dark red-brown; cilia yellowish at base, pinkish at tips. Underside of fore wing suffused with brown and with waved postmedial and subterminal lines; hind wing ochreous, with slightly waved pinkish medial and postmedial lines.

Hab. W. China, Hou-kou, 1 ♂ type. *Exp.* 42 millim.

Sect. II. Antennæ of male bipectinate with moderate branches, the apical part serrate.

A. Fore wing with black streak below base of cell.
  a. Fore wing with the orbicular large, V-shaped. *herrich-schæfferi.*
  b. Fore wing with the orbicular narrow, oblique.
    a^1. Fore wing with grey fascia on median nervure ..... *vittata.*
    b^1. Fore wing without grey fascia on median nervure ..... *digna.*
B. Fore wing without black streak below base of cell.
  a. Fore wing with the cell black between the stigmata.
    a^1. Fore wing with large black patch beyond the cell ..... *postfusca.*
    b^1. Fore wing without black patch beyond the cell.
      a^2. Fore wing with the orbicular V-shaped, open above..... *tibetana.*
      b^2. Fore wing with the orbicular round.
        a^3. Fore wing with the subterminal line indistinct ..... *hæsitans.*
        b^3. Fore wing with distinct pale subterminal line ..... *ochracea* ab. *ruptistriga.*

b. Fore wing with the cell not black between the stigmata.
  a^1. Fore wing grey-brown.
    a^2. Head and tegulæ greyish, contrasting.
      a^3. Fore wing with the cell suffused with rufous before and between the stigmata . *infantilis.*
      b^3. Fore wing with the cell not suffused with rufous ..... *facetа.*
    b^2. Head and tegulæ concolorous.
      a^3. Fore wing with prominent pale subterminal line ..... *salicarum.*
      b^3. Fore wing with the subterminal line indistinct ..... *manifesta.*
  b^1. Fore wing more or less strongly tinged with red-brown.
    a^2. Fore wing with distinct pale subterminal line. *ochracea.*
    b^2. Fore wing with the subterminal line indistinct, dark.
      a^3. Fore wing with the terminal area grey ... *ocacensis.*
      b^3. Fore wing with the terminal area concolorous.
        a^4. Fore wing with the postmedial line distinct, dentate.
          a^5. Hind wing with the cilia rufous ..... *olivascens.*
          b^5. Hind wing with the cilia whitish.
            a^6. Fore wing greyish olive tinged with rufous ..... *hersi.*
            b^6. Fore wing pale rufous ..... *coturnicula.*
        b^4. Fore wing with the postmedial line almost obsolete ..... *littoralis.*
    c^2. Fore wing with the subterminal line obsolete.
      a^3. Fore wing suffused with red-brown..... *monochromata.*
      b^3. Fore wing brownish ochreous, the margins tinged with rufous ..... *xanthostola.*
      c^3. Fore wing orange-yellow, striated and partly suffused with rufous ..... *colima.*
  c^1. Fore wing pale yellow.
    a^2. Fore wing irrorated with brown ..... *constanti.*
    b^2. Fore wing not irrorated with brown ..... *serraticornis.*
  d^1. Fore wing grey-white.
    a^2. Fore wing with transverse lines ..... *senescens.*
    b^2. Fore wing without lines..... *cungessi.*

816. Episilia herrich-schæfferi.

Agrotis herrich-schæfferi, Alph. Iris, viii. p. 191 (1895); id. Rom. Mém. ix. p. 206, pl. 13. f. 7; Staud. Cat. Lep. pal. p. 142.

♂. Head ochreous, the antennæ dark brown; thorax reddish brown, with the front of tegulæ white and some white hair in front of patagia and on dorsum; legs fuscous; abdomen ochreous brown and fuscous, the anal tuft rufous. Fore wing grey, suffused with ochreous brown; a subbasal triangular black patch above vein 1; the antemedial line oblique, slightly sinuous, black, and obsolete except between cell and inner margin; claviform with its extremity defined by black; orbicular and reniform whitish, defined by black in the cell before and between them and beyond the latter, the former open above, **V**-shaped; the postmedial line minutely dentate, bent outwards below costa to just beyond

reniform and inwards at lower angle of cell, then oblique to join the antemedial line at inner margin, and with some black suffusion on its inner side; the subterminal line slightly sinuous and formed of minute dentate black spots; a terminal series of black points. Hind wing pale grey-brown, with dark terminal line; the underside with dark discoidal lunule and traces of curved postmedial and subterminal lines.

Hab. Mongolia, Changhai Mts., Uliassutai, Urga, 1 ♂. *Exp.* 32 millim.

817. Episilia vittata. (Plate LXXII. fig. 21.)

Agrotis vittata, Staud. Iris, viii. p. 314, pl. 5. f. 15 (1895); id. Cat. Lep. pal. p. 137.
Agrotis agama, Staud. Iris, viii. p. 315 (1895).

♂. Head and thorax red-brown; palpi black at sides, grey at tips; tegulæ grey, with black medial line and the tips black; abdomen pale brownish. Fore wing reddish brown, the costal edge darker; the costal area whitish at base; the subcostal and median nervures streaked with white, the latter with whitish fascia below it, its lower edge defined by black and dentate at middle; the ante- and postmedial lines obsolete; the cell filled in with black; the orbicular and reniform whitish, the former small, oblique, elliptical, the latter confluent with the submedian fascia; the subterminal line formed by a series of small maculate marks, slightly angled outwards at vein 7. Hind wing pale brownish.

Hab. Tibet, Kuku-noor, 1 ♂, Amdo. *Exp.* 34 millim.

818. Episilia digna.

Raddea digna, Alph. Hor. Soc. Ent. Ross. xxvi. p. 450 (1892); id. Rom. Mém. ix. p. 35, pl. 3. f. 5; Staud. Cat. Lep. pal. p. 202.

♂. Head and tegulæ rufous, antennæ with the shaft whitish, the tegulæ with some grey at base; thorax purplish red, slightly mixed with grey; abdomen grey tinged with fuscous, the anal tuft and ventral surface rufous. Fore wing purplish grey, slightly irrorated with rufous; the costal edge rufous; a waved rufous subbasal line from costa to submedian fold, with a black streak from its lower extremity to near antemedial line, with some whitish above it and rufous below it; the antemedial line rufous, very oblique from costa to subcostal nervure, then oblique to submedian fold where it is acutely angled, then very oblique inwardly to vein 1 and angled outwards above inner margin; claviform small, rufous, slightly defined by whitish above and at extremity; the orbicular and reniform with rufous centres and white annuli defined by black, the former small, oblique, somewhat wedge-shaped, the latter angled inwards on median nervure, the cell before and between them deep rufous, the interspaces just beyond the cell and below it to submedian fold suffused with rufous; the postmedial line rufous, oblique from costa to vein 7, dentate to vein 2, angled inwards in

submedian fold and outwards above inner margin; the subterminal line rufous, diffused on inner side, oblique from costa to vein 6 near postmedial line, then curved, angled inwards in submedian fold and outwards above inner margin, the area beyond it rather pinker with a fine dark terminal line; cilia with a dark line through them. Hind wing pale flesh-colour tinged with fuscous except at termen; cilia pinkish; the underside with the costal area suffused with blood-red.

Hab. Tibet, Kuku-noor, 1 ♂, Amdo. *Exp.* 30 millim.

819. **Episilia postfusca.** (Plate LXXII. fig. 22.)

Agrotis postfusca, Hmpsn. Moths Ind. iv. p. 508 (1896).

♂. Head and thorax pale ochreous tinged with olive; palpi blackish at sides except at tips; frons and tegulæ with some dark-brown hair; pectus and legs dark brown; abdomen brown, the anal tuft pale rufous. Fore wing whitish, irrorated with fuscous and tinged with olive-yellow towards costa and inner margin; an indistinct double, waved, subbasal line from costa to submedian fold; an oblique double, waved, antemedial line, strongly angled inward on vein 1 and with blackish spot beyond it on costa; claviform only marked by some black scales at its extremity; orbicular and reniform large, whitish, the former oblique rounded, the cell before and between them black; an indistinct oblique waved medial line from lower angle of cell to inner margin; the area from end of cell to subterminal line black from costa to vein 3; the postmedial line double, dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line indistinct, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; cilia yellowish. Hind wing deep fuscous; the cilia yellowish and fuscous; the underside whitish, the costal area suffused with fuscous, a black discoidal spot and sinuous postmedial line.

Hab. Ceylon, Hadamulla (*Green*), 1 ♂ type. *Exp.* 34 millim.

*820. **Episilia tibetana.** (Plate LXXVIII. fig. 1.)

Agrotis tibetana, Staud. Iris, viii. p. 306 (1825); id. Cat. Lep. pal. p. 137.

♂. Head and thorax purplish brown, the hairs tipped with grey; tarsi banded with black; abdomen reddish brown with pale segmental lines, the ventral surface darker. Fore wing brown strongly suffused with purplish grey; the subbasal line represented by indistinct double striæ from costa; antemedial line double, the inner line indistinct except at costa, angled outwards below costa and slightly inwards on vein 1; orbicular and reniform large, with fine white annuli defined by black, the former **V**-shaped, open above, the latter indistinctly defined except on inner side; the cell black-brown before and between the stigmata and below orbicular, shading into diffused red-brown below the cell; postmedial

line minutely dentate and produced to short streaks on the veins, strongly bent outwards below costa, excurved to vein 4, then incurved; subterminal line whitish, slightly defined by brown on inner side and with a black bar before it on costa, angled outwards at vein 7 and excurved at middle; a fine grey line at base of cilia. Hind wing ochreous white irrorated with brown, the apex slightly suffused with brown; the underside more strongly irrorated, the costal area tinged with vinous red, a dark discoidal lunule and sinuous postmedial line.

Hab. Tibet, Kuku-noor in Coll. Püngeler, Amdo. *Exp.* 38 millim.

821. Episilia hæsitans. (Plate LXXII. fig. 23.)

Agrotis hæsitans, Wlk. x. 329 (1856); Smith, Cat. Noct. N. Am. p. 63.

♂. Head and thorax pale grey-brown, the hairs blackish at tips; abdomen grey-brown irrorated with fuscous. Fore wing pale grey-brown, irrorated sparsely with black; the subbasal line represented by small black spots below costa and cell; the antemedial line by small spots on costa and below cell; the orbicular and reniform concolorous, defined by rather X-shaped black spots on their inner edge, the former round, the latter moderate; the postmedial line black, minutely crenulate, slightly bent outwards below costa, excurved to vein 4, then bent inwards to below end of cell; a terminal series of black points. Hind wing brown, rather paler towards base and inner area; the cilia pale, with a brown line through them.

Hab. U.S.A., Rocky Mts. (*Doubleday*), 1 ♂ type. *Exp.* 38 millim.

*822. Episilia infantilis.

Agrotis infantilis, Staud. Iris, viii. p. 305 (1895); id. Cat. Lep. pal. p. 137.

♂. Head and thorax white, the former tinged with ochreous on vertex; palpi, except at tips, and sides of frons black; thorax pale grey-brown; abdomen grey, the ventral surface irrorated with brown, the anal tuft pale rufous. Fore wing grey tinged with purplish rufous; subbasal line represented by double striæ from costa; the antemedial line indistinct, double, waved, with prominent black striæ from costa; orbicular pale, oblique, elliptical; reniform narrow, with fuscous centre and indistinct greyish annulus; the cell before and between the stigmata and the area just below the cell suffused with rufous; postmedial line dentate, with pale points beyond it on the veins, bent outwards below costa, excurved to vein 4, then oblique and incurved in submedian fold; the veins of terminal area with dark streaks; the subterminal line pale, slightly angled outwards at vein 7 and excurved at middle, the area beyond it tinged with fuscous; a terminal series of dark points; cilia pale rufous. Hind wing grey tinged with fuscous

brown ; the underside grey irrorated with fuscous, a dark discoidal lunule and curved postmedial line.

Hab. Tibet, Kuku-noor in Coll. Püngeler, Amdo. *Exp.* 38 millim.

823. Episilia faceta.

Noctua faceta, Treit. Schmett. Eur. x. 2, p. 35 (1835); Mill. Mém. Soc. Nat. Cannes, 1879, pl. 7. f. 1 ; Staud. Cat. Lep. pal. p. 154.
Noctua variicollis, Delahaye, Bull. Soc. Fr. 1886, p. 63 ; Oberth. Et. Ent. xii. p. 30, pl. 7. f. 53 *a* ; Mab. Nov. Lep. p. 68, pl. 11. f. 6 (1892).

♂. Head and tegulæ red-brown largely mixed with white; thorax deep chestnut-brown ; palpi chestnut, white at extremity; tarsi ringed with white ; abdomen grey-brown. Fore wing reddish brown suffused with grey ; a waved black subbasal line from costa to submedian fold, angled outwards below costa and with some reddish marks beyond it ; an irregularly waved black antemedial line ; orbicular and reniform defined by rufous, the former small, round, the latter with black centre and placed on a brown line which is bent inwards to costa and incurved in submedian fold ; postmedial line fine, black, highly dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct, diffused, grey, defined by a dark patch before it on costa, angled outwards at vein 7 and excurved at middle ; a terminal series of black points ; cilia rufous. Hind wing ochreous-white suffused with fuscous-brown especially towards termen ; cilia pale rufous ; the underside ochreous-white irrorated with black-brown, a discoidal bar, dentate postmedial line, and terminal lunulate line.

Hab. S.E. France ; Corsica ; Spain, Grenada (*A. H. Jones*), 1 ♂ ; Portugal ; S. Italy, Capri (*S. Browne*), 1 ♂ ; Algeria, 1 ♂ ; Morocco, Tangier (*Meade-Waldo*), 2 ♂. *Exp.* 34 millim.

824. Episilia salicarum.

Hydræcia salicarum, Wlk. xi. 717 (1857); Smith, Cat. Noct. N. Am. p. 63.
Agrotis claviformis, Morr. Proc. Bost. Soc. N. H. xvii. p. 162 (1874).
Pachnobia orilliana, Grote, Can. Ent. vii. pp. 154 & 227 (1875).

Head and thorax rufous mixed with grey ; tegulæ with a white

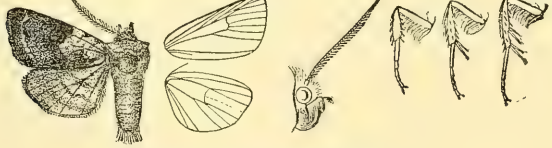


Fig. 85.—*Episilia salicarum*, ♂. ½.

line at extremity ; abdomen grey-brown mixed with dark brown, the anal tuft ferruginous. Fore wing rufous suffused with grey ; a subbasal rufous line from costa to submedian fold ; the antemedial

line oblique, slightly angled inwards on vein 1, with the rather elongate rufous claviform stigma on its outer edge; orbicular and reniform grey, with brown centres and rufous outlines, the former round, moderate, the latter large; the medial shade with its inner edge angled outwards to lower angle of cell; the postmedial line crenulate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale grey, slightly angled inwards at vein 7 and excurved below middle, with a ferruginous shade on its inner edge expanding into a spot at costa and the area beyond it darker; a terminal series of black points. Hind wing reddish brown slightly mixed with grey; the cilia whitish. Underside grey irrorated with brown; hind wing with discoidal spot, both wings with sinuous postmedial line.

Hab. Canada, Hudson's Bay, (*Bramston*) 4 ♀ type, (*Norman*) 1 ♂; U.S.A., 1 ♀ type *orillana*, Maine, Massachusetts. *Exp.* 34 millim.

825. Episilia manifesta. (Plate LXXII. fig. 24.)

Agrotis manifesta, Morr. Proc. Bost. Soc. xviii. p. 116 (1868); Smith, Cat. Noct. N. Am. p. 62.

♀. Head, thorax, and abdomen brownish grey; palpi black at sides except at tips. Fore wing grey-brown slightly irrorated with fuscous; the subbasal line represented by small black spots below costa and cell; the antemedial line indistinct, oblique, waved; orbicular a small black spot, reniform a small lunule; the postmedial line minutely waved, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line indistinct greyish defined by slight fuscous suffusion on inner side, slightly excurved at vein 7 and middle. Hind wing fuscous brown; the underside greyer thickly irrorated with fuscous brown, a small black discoidal lunule and indistinct curved postmedial line.

Hab. U.S.A., New Jersey, Newark, 1 ♀, New York, Long Island. *Exp.* 36 millim.

826. Episilia ochracea.

Oxira ochracea, Wlk. xxxii. 657 (1865); Hmpsn. Moths Ind. ii. p. 182.
Hadena ruptistriga, Wlk. xxxiii. 739 (1865).
Mythimna deparca, Butl. A. M. N. H. (5) iv. p. 358 (1879).
Graphiphora frontalis, Moore, Lep. Ceyl. iii. p. 35 (1884); Hmpsn. Ill. Het. ix. pl. 161. ff. 20, 21.
Agrotis stictica, Pouj. Bull. Soc. Ent. Fr. (6) vii. p. lxviii (1887).
Graphiphora varia, Swinh. P. Z. S. 1889, p. 412.

♂. Head and thorax brownish ochreous to bright ferruginous, dark rufous, or olive-brown; palpi deep chocolate at sides except at tips; pectus and legs chocolate and black, the spurs and tarsal joints ringed with white. Fore wing ochreous tinged with ferruginous, rufous, olive-brown, or grey-brown; a double waved subbasal line from costa to submedian fold, with black points in the cell before and beyond it; a double waved antemedial

line; claviform represented by a black point at its extremity; orbicular and reniform with brownish centres and grey annuli defined by fuscous, the former round, the latter usually with fuscous patch in its lower part, the lower part of cell before and between the stigmata often with black fascia; an indistinct waved medial line angled outwards on median nervure; the postmedial line dentate and produced to grey and black points on the veins, bent outwards below costa, slightly incurved in discal fold and incurved below vein 4; the subterminal line ochreous, angled slightly outwards at vein 7 and excurved at middle, usually very minutely dentate and with series of dark points on its inner side; a terminal series of black points. Hind wing fuscous brown, the cilia ochreous or red-brown; the underside paler, with dark discoidal spot and sinuous postmedial line.

♀. Head, thorax, and fore wing darker, usually purplish brown or dark grey.

Hab. Japan, Yokohama (*Pryer*), 5 ♂ type *deparca*, Kiushu, 2 ♂, Oiwake (*Leech*), 1 ♂; W. China, Ta-chien-lu (*Pratt*), 1 ♂; Tibet, Moupin; Kashmir, Scinde Valley, 1 ♀, Goorais Valley (*Leech*), 1 ♀, Narkundah (*McArthur*), 1 ♂, 3 ♀, Kokser, 2 ♂, 1 ♀, Jalauri Pass, 2 ♂; Kulu, Sultanpur (*G. Young*), 4 ♂, 1 ♀; Punjab, Thundiani (*Yerbury*), 2 ♂, Handar, 1 ♀, Rawul Pindee, 1 ♀, Dharmsála (*Hocking*), 5 ♂, 11 ♀, Umballa, 1 ♂, 1 ♀ type *varia*; S. India, Palni Hills, 7000 ft. (*Campbell*), 1 ♀; Ceylon (*Green*), 3 ♂, 3 ♀ type (*Templeton*), 1 ♀ type *ruptistriga*. *Exp.* 32–40 millim.

*827. Episilia ocacensis.

Agrotis okakensis, Pack. Proc. Bost. Soc. N. H. xi. p. 38 (1867); Smith, Cat. Noct. N. Am. p. 64.

Rather pale rust-red. Fore wing with the costal area irrorated with grey to the postmedial line; the terminal area steel-grey; the lines single, brown; the antemedial line interrupted, erect; claviform obsolete; orbicular and reniform large, irregular, with pale annuli; postmedial line distinct, sinuous; subterminal line only defined by the grey terminal area, twice dentate outwardly, then sinuous. Hind wing brownish grey, with a fuscous discoidal spot; the underside grey with reddish irroration, a dark discoidal spot.

Hab. Canada, Labrador; U.S.A., New Hampshire, Mt. Washington. *Exp.* 34 millim. This species is unknown to me.

828. Episilia olivascens. (Plate LXXII. fig. 25.)

Agrotis olivascens, Hmpsn. Moths Ind. ii. p. 182 (1894).

Head, thorax, and abdomen rufous tinged with olive; palpi chestnut except at tips. Fore wing rufous suffused with olive-ochreous; the veins slightly streaked with grey; an indistinct rufous streak below base of cell; subbasal and antemedial lines obsolete; orbicular and reniform indistinct, only defined by the cell

before and below the orbicular and between it and reniform being rufous, the former rounded, the latter with slight fuscous mark at its lower extremity; the postmedial line indistinct, dentate, and produced to points on the veins, bent outwards below costa and oblique below vein 4; the subterminal line very indistinct, waved, the veins beyond it with slight dark streaks; a terminal series of points. Hind wing pale fuscous, the cilia rufous; the underside pale rufous irrorated with fuscous, a small discoidal spot and traces of a curved postmedial line.

Hab. Tibet, Yatung (*Hobson*), 2 ♂; Sikhim (*Elwes*), 2 ♀ type. *Exp.* 34–40 millim. Type † ♂ in Coll. Elwes.

829. Episilia hersi.

Agrotis herzi, Christ. Iris, vi. p. 90 (1893); Alph. Rom. Mém. ix. pl. 14. f. 7; Staud. Cat. Lep. pal. p. 141.

♂. Head and thorax pale reddish brown mixed with grey; palpi rufous, pale at tips; abdomen greyish fuscous, the anal tuft ochreous. Fore wing pale olive grey-brown, suffused in parts with rufous especially towards termen; a waved rufous antemedial line, oblique from costa to submedian fold; orbicular and reniform defined by rufous, the former round, the latter suffused with rufous; an oblique diffused line from lower angle of cell to inner margin; the postmedial line slightly waved, bent outwards below costa, excurved to vein 4, then incurved; subterminal line slightly waved, only defined by dark suffusion on its inner edge; a dark terminal line. Hind wing fuscous brown; the cilia yellowish white; the underside greyish suffused with fuscous, and with rufous towards costa, a dark discoidal lunule and traces of curved postmedial and subterminal lines.

Hab. Mongolia, Uliassutai, 1 ♂, Changai Mts.; S.E. Siberia. *Exp.* 32 millim.

830. Episilia coturnicula. (Plate LXXII. fig. 26.)

Agrotis coturnicula, Græs. Berl. ent. Zeit. 1892, p. 219; Staud. Cat. Lep. pal. p. 142.

♂. Head, thorax, and abdomen pale reddish brown with an olive tinge; palpi bright rufous, pale at tips. Fore wing pale rufous; the subbasal line represented by a rufous point on costa; the antemedial line rufous, angled outwards below costa, in submedian fold and above inner margin; orbicular and reniform defined by rufous, large, the former irregularly rounded, the latter with rufous centre; a medial shade angled at lower angle of cell; postmedial line produced to slight points on the veins, bent outwards below costa, excurved to vein 4, then oblique; subterminal line indistinct, with darker rufous patch on its inner side at costa, slightly angled at vein 7 and incurved below vein 3; a fine terminal line. Hind wing fuscous brown, paler towards base and inner margin; cilia yellowish white; the underside whitish, the costal

area suffused with rufous, the terminal area with brown, traces of a curved postmedial line.

Hab. AMURLAND, Potrovka, 1 ♂. *Exp.* 36 millim.

831. **Episilia littoralis.** (Plate LXXII. fig. 27.)

Agrotis littoralis, Pack. Proc. Bost. Soc. N. H. xi. p. 36 (1868); Smith, Cat. Noct. N. Am. p. 62.
Pseudorthosia pectinata, Grote, Proc. Ac. Nat. Sci. Phil. p. 207 (1874).
Pachnobia ferruginoides, Smith, Bull. U.S. Nat. Mus. 38, p. 56 (1890).

♂. Head and thorax pale ferruginous; abdomen ochreous irrorated with fuscous brown. Fore wing pale ferruginous; traces of an oblique antemedial line; the orbicular very indistinct, round, with ferruginous annulus; reniform obscure, small, on the rather oblique ferruginous medial shade; traces of a curved postmedial line; the subterminal line defined by a curved ferruginous band on its inner edge. Hind wing fuscous brown, with traces of a dark discoidal spot; cilia pale.

♀ with the markings more distinct.

Hab. CANADA, Labrador, Caribou I.; U.S.A., Montana, Black Hills, Colorado, Hall Valley, 1 ♂ type *pectinata*. *Exp.* 38 millim.

*832. **Episilia monochromatea.** (Plate LXXII. fig. 28.)

Agrotis monochromatea, Morr. Proc. Bost. Soc. N. H. xvii. p. 165 (1874); Smith, Cat. Noct. N. Am. p. 62.

♀. Head and thorax red-brown; abdomen grey, the extremity rufous. Fore wing fuscous grey, entirely and evenly suffused with bright red-brown; an indistinct curved dark antemedial line; the postmedial line oblique from costa just beyond middle to vein 4 where it is angled, then strongly incurved and slightly angled outwards on vein 1; no trace of the stigmata or other markings. Hind wing grey suffused with fuscous brown, the cilia whitish; the underside whitish, the costal area tinged with rufous, traces of a diffused postmedial line more distinct towards costa.

Hab. U.S.A., New Hampshire, Durham, in Coll. J. B. Smith, Massachusetts. *Exp.* 32 millim.

833. **Episilia xanthostola.** (Plate LXXII. fig. 29.)

Agrotis xanthostola, Mab. Bull. Soc. Philom. (7) ix. p. 61 (1885).
Agrotis dalei, Butl. A. M. N. H. (6) xii. p. 207 (1893).

♂. Head and thorax brownish ochreous; palpi black at sides except towards extremity; extremity of 1st joint of antennæ black; pectus blackish in front; legs strongly irrorated with black; abdomen ochreous white tinged with fuscous, the anal tuft and ventral surface ferruginous red. Fore wing pale brownish ochreous sparsely striated with black, the margins tinged with rufous; the markings obsolete except a faint trace of the reniform and the postmedial line, which is represented by a series of black points on the veins,

curved from costa to vein 4, then oblique; a terminal series of black points; cilia rufous. Hind wing white, thickly irrorated with fuscous brown and suffused with fuscous on costal and terminal areas; cilia reddish ochreous. Underside of fore wing suffused with fuscous; hind wing white, the costal area brownish irrorated with black, a black discoidal lunule and curved postmedial series of short streaks on the veins.

Hab. Falkland Is., Darwin Harbour (*Dr. Dale*), 1 ♂ type *dalei*, (*Vallentin*) 1 ♂; Patagonia, Santa Cruz, type † ♂ in Mus. Paris. *Exp.* 44 millim.

*834. Episilia colima. (Plate LXXII. fig. 30.)

Carneades colima, Schaus, J. N. Y. Ent. Soc. vi. p. 109 (1898).

♂. Head and thorax yellow, the latter tinged with bright rufous; palpi blackish at sides, pink in front; pectus with the hair pink; legs blackish; abdomen rufous, the ventral surface purplish pink. Fore wing orange-yellow, suffused with rufous on inner area and terminal half and striated with rufous; the subbasal line represented by dark points below costa and cell; a dentate antemedial line angled outwards below costa, in submedian fold, and above margin and inwards on median nervure and vein 1; orbicular and reniform rufous with yellow annuli, the former elliptical, inwardly oblique, the latter rather Z-shaped, its upper extremity slightly incurved; a dentate postmedial line bent outwards below costa, excurved to vein 4, then oblique; the termen rather darker and with a terminal series of dark points. Hind wing semihyaline white, the veins, inner margin, and cilia tinged with ochreous; a terminal series of dark points; the underside with the costal area irrorated with rufous, a discoidal point and postmedial series of points on the veins.

Hab. Mexico, Colima, type † ♂ in Coll. Schaus. *Exp.* 46 millim.

*835. Episilia constanti.

Agrotis constanti, Mill. Icon. i. p. 165, pl. 9. ff. 1, 2 (1860); Staud. Cat. Lep. pal. p. 145.

♂. Pale yellow. Fore wing with some darker irroration, most prominent on medial area; some dark striæ from basal part of costa; a fine antemedial line angled outwards in submedian fold and inwards on vein 1; orbicular and reniform very faintly indicated; a dentate postmedial line excurved from costa to vein 4, then incurved; a punctiform subterminal line and a terminal series of points. Hind wing white, the termen and cilia yellowish. Underside of fore wing with the disk suffused with fuscous.

Hab. France, Ardèche. *Exp.* 42 millim. This species is unknown to me.

836. Episilia serraticornis. (Plate LXXII. fig. 31.)

Agrotis serraticornis, Staud. Iris, x. p. 274 (1897); id. Cat. Lep. pal. p. 148.

♂. Head and thorax sulphur-yellow; abdomen white slightly tinged with ochreous. Fore wing sulphur-yellow; the subbasal line represented by a rufous striga on costa, the antemedial line by a rufous striga on costa, an excurved portion in submedian interspace and a very indistinct part angled outwards above inner margin; claviform and orbicular obsolete; reniform a small brown ocellus; postmedial line minutely dentate, rufous, excurved below costa and incurved below vein 4; subterminal line represented by an indistinct series of dentate marks, angled outwards at vein 7 and excurved at middle; a terminal series of minute points; cilia brown at tips. Hind wing white, the terminal area tinged with ochreous.

Hab. Spain, Castille, Cuenca (*Korb*), 1 ♂, 2 ♀. *Exp.* 42 millim.

837. Episilia senescens. (Plate LXXII. fig. 32.)

Agrotis senescens, Staud. Stett. ent. Zeit. 1881, p. 416; id. Cat. Lep. pal. p. 137.
Agrotis senilis, Staud. Stett. ent. Zeit. 1888, p. 1.

Head and thorax grey, the hairs pencilled with brown; abdomen grey-brown, the ventral surface irrorated with brown. Fore wing brownish grey thickly irrorated with brown; an indistinct oblique brown antemedial line, with slight dark streaks on its inner side at the veins; orbicular and reniform very indistinct, the former open V-shaped; the postmedial line indistinct and produced to points on the veins, excurved from costa to vein 4, then oblique; the subterminal line indistinct, slightly angled outwards at vein 7. Hind wing pale grey-brown.

Ab. 1. *senilis*. Head, thorax, and fore wing whiter, the last with the markings indistinct, the medial area tinged with ferruginous red in and below cell, and some dentate ferruginous marks before the subterminal line.

Hab. W. Turkestan, Fergana, Tura, 2 ♂, 2 ♀; W. Siberia, Altai, 3 ♂; E. Turkestan, Kuldja, 1 ♂, 1 ♀; Amurland, 1 ♂, 1 ♀. *Exp.* 40 millim.

838. Episilia cungessi.

Agrotis kungessi, Alph. Hor. Soc. Ent. Ross. xvii. p. 62, pl. 1. f. 40 (1882); Staud. Cat. Lep. pal. p. 137.

Head and thorax white, palpi and tegulæ slightly mixed with brown; fore femora brownish above; abdomen white, dorsally tinged with ochreous, ventrally irrorated with brown. Fore wing white. Hind wing white suffused with fuscous, and with traces of sinuous postmedial and subterminal lines. Underside of fore wing suffused with fuscous except towards margins; hind wing white.

Hab. W. Turkestan, Tura, 1 ♂, 1 ♀; E. Turkestan, Kuldja, 1 ♂, 1 ♀. *Exp.* 40 millim.

Sect. III. Antennæ of male serrate and fasciculate.

A. Fore wing with black streak below base of cell.
  a. Fore wing with the orbicular oblique, V-shaped ..... *panda.*
  b. Fore wing with the orbicular elliptical.
    a^1. Fore wing brown ..... *bistrigata.*
    b^1. Fore wing grey ..... *terrifica.*

B. Fore wing with ochreous streak below base of cell, confluent with the claviform.
  a. Fore wing with the reniform small ..... *elevata.*
  b. Fore wing with the reniform large ..... *tecta.*

C. Fore wing without black or ochreous streak below base of cell.
  a. Fore wing with the costal area ochreous to postmedial line.
    a^1. Fore wing with the reniform angled inwards on median nervure ..... *retracta.*
    b^1. Fore wing with the reniform not angled inwards on median nervure ..... *flavicosta.*
  b. Fore wing with the costal area concolorous.
    a^1. Fore wing with black bar from costa before subterminal line ..... *fishi.*
    b^1. Fore wing without black bar from costa before subterminal line.
      a^2. Fore wing more or less strongly tinged with red-brown.
        a^3. Fore wing with prominent grey annuli to stigmata.
          a^4. Fore wing with the orbicular V- or U-shaped, open above ..... *cinerea.*
          b^4. Fore wing with the orbicular more rounded . *festiva.*
        b^3. Fore wing without prominent grey annuli to stigmata.
          a^4. Fore wing with black patch in cell between the stigmata ..... *ceramophæa.*
          b^4. Fore wing with the cell dark rufous ..... *tenuis.*
          c^4. Fore wing with the cell concolorous.
            a^5. Head and thorax red-brown; fore wing ochreous; the medial area suffused with red-brown ..... *loresi.*
            b^5. Head, thorax, and fore wing bright rufous. *destituta.*
            c^5. Head, thorax, and fore wing dark red-brown ..... *homochroma.*
      b^2. Fore wing grey-brown.
        a^3. Fore wing with the lines single ..... *cinerascens.*
        b^3. Fore wing with the lines double.
          a^4. Fore wing with grey centre to orbicular ..... *nyctymerina.*
          b^4. Fore wing with the orbicular almost entirely flesh-colour ..... *similis.*
      c^2. Fore wing pale yellow .... *psammoda.*

839. **Episilia panda.** (Plate LXXIII. fig. 4.)

Agrotis panda, Leech, Trans. Ent. Soc. 1900, p. 33.

♂. Head rufous; thorax clothed with rufous and grey hair; abdomen brown tinged with rufous. Fore wing purplish grey, the medial area largely suffused with ferruginous; the subbasal line ferruginous, from costa to submedial fold; a fine pale streak in basal half of submedian fold defined by black below, then by ferruginous above vein 1; the antemedial line only defined by the

ferruginous suffusion beyond it, oblique from costa to submedian fold, then angled inwards on vein 1 and outwards above inner margin; orbicular and reniform ferruginous defined by grey, the former small, very oblique, triangular, the latter indistinct and strongly angled inwards on median nervure, the cell before, below orbicular, and between the stigmata suffused with blackish; the postmedial line rather ill-defined, strongly dentate, angled inwards in submedian fold; the subterminal line only defined by the ferruginous suffusion before it, obliquely incurved from costa to vein 3, then angled inwards in submedian fold; a terminal series of ferruginous points. Hind wing pale brown; the underside pale, with the costal area suffused with rufous.

Hab. W. China, Pu-tsu-fang, 1 ♂ type. *Exp.* 34 millim.

*840. Episilia bistrigata. (Plate LXXIII. fig. 5.)

Agrotis bistrigata, Mssn. Stübel's Reise, p. 142, pl. 6. f. 13 (1890).

♀. Head and thorax dark red-brown; palpi with the 2nd joint blackish at sides; tegulæ with black medial line; abdomen greyish brown. Fore wing red-brown tinged with purplish red; a black fascia below the cell to middle of wing; the subbasal and antemedial lines obsolete; the cell filled in with black; orbicular purplish brown, small, elliptical; reniform small, open above and below, defined on outer side by black; postmedial line very indistinct, excurved from costa to vein 4, then oblique; the subterminal line only indicated by the area beyond it being blackish, angled outwards to near termen at vein 7 and dentate to termen at veins 4, 3, 2 and at tornus. Hind wing pale, uniformly suffused with brown, the veins brown; cilia whitish; underside whitish.

Hab. Colombia; Ecuador, Loja, in Coll. Schaus. *Exp.* 36 millim.

841. Episilia terrifica. (Plate LXXIII. fig. 6.)

Setagrotis terrifica, Smith, Ent. News. Philad. 1893, p. 98, pl. 6. f. 2; id. Trans. Am. Ent. Soc. xxi. p. 42, pl. 2. f. 2.

♂. Head and thorax grey mixed with fuscous brown; sides of palpi and frons blackish; tegulæ with blackish medial line; abdomen grey irrorated with fuscous and the ventral surface with black. Fore wing whitish irrorated with brown and fuscous; a slight black streak in base of submedian fold; claviform elongate, whitish slightly defined by black; orbicular and reniform white defined by black, the former elliptical, open above, the cell before and between them suffused with black; the postmedial line somewhat dentate, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line represented by a somewhat diffused brownish shade, slightly curved towards costa, then oblique; a terminal series of black points; cilia white, with a fuscous line through them. Hind wing white; the costal area slightly tinged with brown; the underside with the costal area slightly irrorated

with brown, a small discoidal spot and postmedial series of short streaks on the veins.

Hab. U.S.A., Colorado (*Bruce*), 1 ♂. *Exp* 36 millim.

*842. Episilia elevata.

Pachnobia elevata, Smith, Trans. Am. Ent. Soc. xviii. p. 104 (1891); id. Cat. Noct. N. Am. p. 64.

♂. Reddish grey. Fore wing with the lines single; subbasal line incomplete, ill-defined; antemedial line erect, rather even, excurved above inner margin, interrupted; claviform a yellowish streak defined by black and produced as a yellowish streak to base; orbicular and reniform pale grey defined by black scales, the former elongate, produced on inner and outer sides, the latter a small lunule; postmedial line entire, rather even, bent outwards below costa, excurved to vein 4, then rather unevenly oblique; subterminal line represented by a series of brown dashes in the interspaces on a greyish shade; an interrupted terminal line. Hind wing whitish, tinged with fuscous towards apex; the underside whitish with dark irroration, a discoidal lunule and diffused postmedial line.

Hab. U.S.A., Colorado (*Bruce*). *Exp.* 35 millim. This species is unknown to me.

843. Episilia tecta.

Noctua carnea, Treitsch, Schmett. Eur. v. 2, p. 216 (1825), nec Thunbg.
Noctua tecta, Hübn. Schmett. Eur., Noct. f. 377 (1827); Staud. Cat. Lep. pal. p. 138.
Noctua ampla, Hübn. Schmett. Eur., Noct. f. 425 (1827).

Head and thorax ferruginous; abdomen yellow-brown, with the hair at sides and the anal tuft fulvous. Fore wing ferruginous,

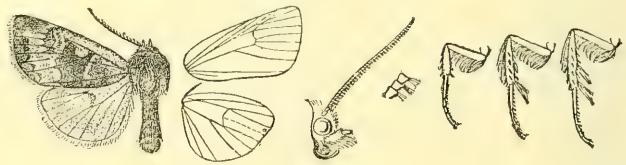


Fig. 86.—*Episilia tecta*, ♂. ½.

suffused with grey on basal, costal, and terminal areas; the antemedial line indistinct, oblique, waved, defined by grey on inner side; claviform elongate, linear, grey defined by rufous; the cell filled in with rufous, defining the grey orbicular and reniform stigmata, the former open above and somewhat diamond-shaped, the latter constricted at middle; the postmedial line minutely dentate, excurved from costa to vein 4, then slightly incurved; the subterminal line indistinct and slightly angled outwards at veins 7 and 4; a terminal series of brown striæ. Hind wing pale yellow-

brown, with a fine brown terminal line; the cilia pale; the underside with small discoidal spot and curved postmedial line.

Antennæ of male very minutely serrate.

Hab. Scandinavia; Russia, Livonia, 1 ♂, 2 ♀. *Exp.* 40 millim.

Larva. Staud. Stett. ent. Zeit. 1861, p. 367; Sandberg, Berl. ent. Zeit. xxix. p. 258 (1885).

Head chestnut-brown, with dark reticulations and dark margins on inner side of hemispheres; body reddish brown thickly striated with black; dorsal line fine, white, on abdominal segments edged with black; segmental incisions almost black; subdorsal lines indistinct; lateral area darkest; spiracles black with white centres; subbasal area flesh-coloured with black warts. Food-plants: *Vaccinium myrtillus* and *uliginosum*, *Alchemilla*, *Betula*.

Pupa dark brown, with the cremaster black.

*844. Episilia retracta, n. sp. (Plate LXXIII. fig. 7.)

♂. Head and tegulæ rufous, the latter with some grey near base and grey tips; thorax olive-brown; pectus, legs, and abdomen rufous. Fore wing dark olive-brown, thickly irrorated with blue-grey; the costal area pale rufous irrorated with grey; the cell black-brown; traces of an antemedial line from submedian fold to inner margin; claviform a narrow pale rufous streak; orbicular and reniform pale rufous defined by whitish and confluent with costal area, the former very narrow and oblique, the latter narrow and angled inwards on median nervure to middle of cell; the postmedial line double, minutely waved, filled in with grey, bent outwards below costa to long beyond cell, excurved to vein 4, then incurved; a curved dark subterminal line; cilia brown. Hind wing brown, tinged with fuscous on costal and terminal areas; cilia pale brown.

Hab. Sikhim (*Möller*), type † ♂ in Coll. Elwes. *Exp.* 30 millim.

845. Episilia flavicosta. (Plate LXXIII. fig. 8.)

Noctua flavicosta, Wllgrn. Ent. Mon. iv. p. 169 (1860).
Ochropleura magellanica, Butl. P. Z. S. 1881, p. 83.

♀. Head and thorax bright rufous; palpi and frons more ochreous; legs and abdomen dark brown, the anal tuft rufous. Fore wing dark red-brown, sometimes with some dark irroration; the costal area ochreous to beyond middle; the lines obsolete, sometimes represented by dark points on costa; orbicular and reniform ochreous, confluent with the costal area, the former elliptical; the postmedial line sometimes traceable, dentate, bent outwards below costa, excurved to vein 4, then incurved; a terminal series of blackish points sometimes present. Hind wing pale suffused with reddish brown; cilia ochreous; the underside pale, the costal area suffused with reddish brown; a discoidal lunule and sinuous postmedial line.

Hab. Patagonia, Sandy Point (*Cunningham*), 1 ♀ type *magellanica*, Latitude Cove (*Coppinger*), 1 ♀, Cockle Cove, 1 ♀, Puerto Bueno, 1 ♀, Wolsey Sound, 1 ♀. *Exp.* 44–48 millim. Type † in Mus. Stockholm.

846. **Episilia fishi.** (Plate LXXIII. fig. 9.)

Agrotis fishii, Grote, Bull. Geol. Surv. iv. p. 175 (1878); Smith, Cat. Noct. N. Am. p. 64.

Head and thorax purplish brown, the scales tipped with grey; antennæ with the shaft whitish at base; abdomen red-brown mixed with white, the anal tuft ferruginous. Fore wing purplish brown suffused with grey and irrorated with fuscous; a waved dark subbasal line from costa to submedian fold; a waved dark antemedial line; claviform obsolete; orbicular marked by a few grey and dark scales; reniform with a patch of greenish-grey scales in centre and some dark scales on outline; the medial shade oblique from costa to lower angle of cell where it is angled, then inwardly oblique; the postmedial line crenulate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line represented by a sinuous series of grey and dark points and a dark bar from costa to vein 6; a fine waved terminal line; cilia rufous. Hind wing fuscous brown, the cilia rufous; the underside greyish irrorated thickly with rufous, and with indistinct discoidal spot and curved postmedial line.

Hab. U.S.A., Maine, Oldtown, 1 ♂, 2 ♀, type. *Exp.* 40 millim.

847. **Episilia cinerea.** (Plate LXXIII. fig. 10.)

Pachnobia cinerea, Staud. Cat. Lep. p. 114 (1871); id. Cat. Lep. pal. p. 138; Smith, Cat. Noct. N. Am. p. 64.

♂. Head, thorax, and abdomen purplish brown. Fore wing purplish brown, tinged with grey on basal and terminal areas; the antemedial line greyish, indistinct, oblique, waved; the claviform wedge-shaped, greyish with dark outline; the cell filled in with black-brown or dark red-brown defining the orbicular and reniform, which have brown centres and greyish outlines, the former open above and somewhat **V**- or **U**-shaped, the latter moderate; the postmedial line minutely dentate, dark, excurved from costa to vein 4, then incurved; the subterminal line defined by the greyer terminal area, slightly angled outwards at vein 7 and incurved below vein 3; a fine dark terminal line and grey points on extremity of veins. Hind wing yellowish brown, with indistinct dark discoidal spot and curved postmedial line; a fine dark terminal line; the cilia pale.

Hab. Canada, Labrador (*Gerhard*), Zeller, Frey, Grote, and Leech Colls., 6 ♂. *Exp.* 38 millim.

848. Episilia festiva.

Noctua festiva, Schiff. Wien. Verz. p. 314 (1776); Hübn. Eur. Schmett., Noct. ff. 114, 467; Godt. Lép. Fr. v. p. 186, pl. 61. ff. 5, 6.
Noctua primulæ, Esp. Schmett. iv. pl. 136. ff. 5, 6 (1786); Staud. Cat. Lep. pal. p. 140.
Noctua mendica, Fabr. Ent. Syst. iii. 2, p. 93 (1793).
Noctua subrusa, Haw. Lep. Brit. p. 227 (1809).
Noctua congener, Hübn. Eur. Schmett., Noct. f. 618 (1827).
Noctua conflua, Treit. Schmett. Eur. vi. 1, p. 405 (1827); Dup. Lép. Fr. vii. pl. 109. f. 7; Herr.-Schäff. Eur. Schmett., Noct. f. 154; Weir, Entom. 1884, p. 2, pl. i. ff. 8–10.
Hadena borealis, Zett. Ins. Lap. p. 941 (1840).
Cerastis diducta, Zett. Ins. Lap. p. 946 (1840).
Agrotis ignicola, Herr.-Schäff. Eur. Schmett., Noct. f. 455 (1845).
Agrotis thulei, Staud. Iris, iv. p. 266 (1891).
Agrotis lamentanda, Alph. Rom. Mém. ix. p. 330, pl. 14. f. 6 (1897).

Head and thorax pale olive-brown to red-brown; palpi dark red-brown, pale at tips; pectus, legs, and abdomen red-brown, the last dorsally greyish tinged with fuscous. Fore wing greyish ochreous tinged with rufous; a fine waved subbasal line from costa to submedian fold, with a dark point usually present beyond it in cell; a fine waved antemedial line angled outwards below costa and inwards on vein 1, then bent outwards above inner margin, a rufous shade on its inner side; claviform with its extremity defined by black; orbicular and reniform more or less strongly defined by brown or blackish, the former somewhat quadrangular and open above and below, the latter with its centre brownish, constricted at middle and often angled inwards on median nervure, the space between them suffused with rufous or dark brown; an oblique slightly waved shade from lower angle of cell to inner margin; the postmedial line dentate and produced to points on the veins, slightly bent outwards below costa, excurved to vein 4, then incurved, the area beyond it suffused with rufous to the subterminal line, which is pale and excurved between veins 7 and 2; a terminal series of small dark lunules. Hind wing pale suffused with fuscous brown especially towards termen; a terminal series of dark striæ; cilia ochreous or pinkish; the underside ochreous, the costal area suffused with pink, a dark discoidal lunule and sinuous postmedial line produced to slight streaks on the veins.

Ab. 1. *lamentanda*. Paler and more uniformly ochreous.—Urga, Kamschatka.

Ab. 2. *conflua*. Rather smaller, greyer and duller in tone, the markings less distinct.—N. Europe.

Ab. 3. *thulei*. Darker, with the cell before and between the stigmata wholly or with its lower part blackish.—Shetland Is.

Hab. Britain, Shetland Is. (*Salvage*), Scotland, England, N. Wales, Leech Coll.; France; Germany, Silesia, Zeller & Frey Colls.; Austria; Switzerland; Italy, Piedmont; Iceland, Zeller Coll.; Norway, Frey & Leech Colls.; Finland, Leech Coll.; Russia, St. Petersburg, Zeller Coll., Urals; Armenia; W. Siberia, Altai; W. Turkestan, Issyk-kul; E. Turkestan, Ili; Tibet, Kuku-noor, Amdo. *Exp.* 30–36 millim.

Larva. Meyr. Brit. Lep. p. 103; Barrett, Lep. Brit. iv. p. 74, pl. 146.
Pale ochreous, grey-greenish, or purplish brown; dorsal line pale, dark-edged, indistinct; subdorsal line pale or whitish, edged above by a series of thick dark or blackish marks; sometimes a lateral series of oblique dark marks; subspiracular line pale; head brown, with dark marks. Food-plants: *Rubus, Rumex, Salix.* 8–5.

849. Episilia ceramophæa. (Plate LXXIII. fig. 11.)

Agrotis ceramophæa, Meyr. Faun. Hawai. i. p. 151 (1899).

♂. Head and thorax bright chestnut-brown; tegulæ with black medial line; tarsi banded with black; abdomen paler chestnut. Fore wing bright chestnut-brown; the antemedial line hardly traceable, excurved above inner margin; claviform small, fuscous; orbicular and reniform small, fuscous, with some whitish scales on edges of former and inner edge of latter and a black-brown patch between them; postmedial line hardly traceable, dentate, bent outwards below costa, excurved to vein 4, then incurved. Hind wing whitish suffused with chestnut-brown, and with darker terminal line; the underside paler, with black discoidal spot and sinuous postmedial series of short streaks on the veins.
Hab. Hawaii, Kilauea (*Perkins*), 1 ♂ type. *Exp.* 42 millim.

850. Episilia tenuis.

Anchocelis tenuis, Butl. Ill. Het. B. M. vii. p. 57, pl. 127. f. 12 (1889); Hmpsn. Moths Ind. ii. p. 184.

♂. Head and thorax red-brown, the hairs sometimes tipped with grey; abdomen ochreous brown, the anal tuft fulvous. Fore wing purplish red; the costal edge red-brown; a rufous spot below base of cell; traces of a double antemedial line between median nervure and vein 1, with a patch of rufous scales beyond it below the cell; orbicular and reniform indistinct, defined by rufous before and between them and beyond the reniform; the orbicular oblique, open above; traces of a double, waved, postmedial line, bent outwards below costa, excurved to vein 4, then incurved; an indistinct dark subterminal line angled outwards at vein 7 and excurved at middle; a fine whitish line at base of cilia. Hind wing whitish suffused with pale brown especially towards termen; the underside with slight discoidal spot and curved postmedial line.
Hab. Kashmir (*Thompson*), 1 ♂; Punjab, Kangra, Laka, 1 ♂ type. *Exp.* 32 millim.

*851. Episilia loresi. (Plate LXXIII. fig. 12.)

Hiptelia lorezi, Staud. Soc. Ent. vi. p. 137 (1891); Hofm. Gr.-Schmett. Eur. ed. 2, pl. 45. f. 9; Staud. Cat. Lep. pal. p. 202.

♂. Head and thorax bright red-brown; abdomen pale red-brown with a greyish tinge. Fore wing ochreous tinged with rufous, the medial area strongly suffused with red-brown; traces of a waved

subbasal line from costa to submedian fold; antemedial line waved, angled inwards in cell; claviform defined by dark brown at extremity; orbicular and reniform ochreous defined by brown, the former round; traces of a medial shade; postmedial line produced to slight points on the veins, bent outwards below costa, excurved to vein 4, then incurved; subterminal line defined by a brown shade on its inner side, angled outwards at vein 7 and excurved at middle; a terminal series of brown points. Hind wing ochreous suffused with fuscous except the termen from apex to vein 1; the underside slightly tinged with fuscous to the postmedial sinuous line, a discoidal point.

Hab. E. Switzerland; Austria, Tirol, in Coll. Püngeler. *Exp.* 44 millim.

852. **Episilia destituta.** (Plate LXXIII. fig. 13.)

Graphiphora destituta, Leech, Trans. Ent. Soc. 1900, p. 41.

♂. Head and thorax bright rufous; antennæ pale; tarsi dark brown with pale rings; abdomen dark brown, the anal tuft rufous. Fore wing bright rufous suffused with blue-grey and irrorated with fuscous, leaving the cell and area round it rufous; a double, waved, subbasal rufous line from costa to submedian fold; a double, waved, antemedial line angled inwards in submedian fold; orbicular and reniform slightly defined and irrorated with grey, the former small, round; a double minutely waved postmedial line, bent outwards below costa, slightly incurved at discal fold and oblique below vein 4; an indistinct subterminal line slightly angled outwards at vein 7 and excurved at middle; a terminal series of dark points. Hind wing pale fuscous brown; the cilia pale purplish red; the underside greyish, irrorated with dark brown and tinged with purplish red, a small discoidal lunule and indistinct curved postmedial line.

Hab. W. China, Pu-tsu-fong, 1 ♂ type. *Exp.* 40 millim.

853. **Episilia homochroma**, n. sp. (Plate LXXIII. fig. 14.)

♂. Head and thorax deep rufous; antennæ whitish; abdomen fulvous, the ventral surface dark brown. Fore wing deep chocolate-red suffused with silvery blue; an indistinct double, curved, subbasal line from costa to submedian fold; an indistinct double, waved, antemedial line, oblique from costa to above inner margin where it is angled outwards; orbicular and reniform with silvery blue annuli defined by brown, the former oblique, elliptical, open above; the postmedial line double, minutely waved, bent outwards below costa, slightly incurved at discal fold, incurved below vein 4; cilia purplish red. Hind wing ochreous white more or less suffused with fuscous brown; cilia purplish red; the underside suffused with purplish red and irrorated with fuscous, a small discoidal spot and postmedial line slightly angled at vein 6.

Hab. Tibet, Yatung (*Hobson*), 6 ♂ type. *Exp.* 30–34 millim.

*854. Episilia cinerascens. (Plate LXXIII. fig. 15.)

Pachnobia cinerascens, Smith, Trans. Am. Ent. Soc. xviii. p. 103 (1891); id. Cat. Noct. N. Am. p. 64.

♂. Head and thorax fuscous grey; palpi black at sides except at tips; tibiæ and tarsi blackish; abdomen grey-brown. Fore wing fuscous grey sparsely irrorated with black; a blackish subbasal line from below costa to submedian fold; an indistinct oblique waved antemedial line; orbicular and reniform black-brown with grey annuli slightly defined by black, the former round; the postmedial line minutely dentate, indistinct, bent outwards below costa, slightly incurved at discal fold and strongly below vein 4; subterminal line indistinct, greyish, slightly defined by fuscous on inner side especially towards costa, angled outwards at vein 7 and excurved at middle. Hind wing grey tinged with fuscous; cilia whitish; the underside grey irrorated with fuscous, a dark discoidal point and sinuous postmedial line.

Hab. U.S.A., Washington, Pullman, in Coll. J. B. Smith, California, Alameda Co. *Exp.* 34 millim.

855. Episilia nyctymerina.

Agrotis nyctymerina, Staud. Stett. ent. Zeit. 1888, p. 6; id. Cat. Lep. pal. p. 143.
Agrotis subdecora, Staud. Iris, viii. p. 353, pl. 6. f. 1 (1895).
Agrotis decorans, Staud. Iris, ix. p. 247 (1896); id. Cat. Lep. pal. p. 144.

Head grey and fuscous; palpi blackish except at tips; thorax clothed with ochreous and fuscous hair; tarsi banded with black; abdomen ochreous dorsally tinged with fuscous. Fore wing ochreous thickly irrorated with fuscous, the disk tinged with orange; a double waved subbasal line from costa to submedian fold; a double waved antemedial line; orbicular and reniform indistinctly defined by orange, a waved medial shade passing between them; postmedial line double, dentate, bent outwards below costa, excurved to vein 4, then incurved, the area between it and the dentate ochreous subterminal line, which is slightly angled outwards at vein 7 and excurved at middle, more strongly suffused with fuscous; a terminal series of slight dark lunules. Hind wing fuscous brown, rather paler towards base, the cilia ochreous, whitish at tips; the underside whitish irrorated with brown, a curved postmedial line, the termen more or less strongly suffused with fuscous.

Hab. W. Turkestan, Issyk-kul, 2 ♂, Alexander Mts., 1 ♂, 1 ♀; E. Turkestan, Ili. *Exp.* 42–48 millim.

856. Episilia similis.

Agrotis similis, Staud. Stett. ent. Zeit. 1881, p. 412; id. Cat. Lep. pal. p. 144.
Agrotis polita, Alph. Hor. Soc. Ent. Ross. xvii. p. 51, pl. 2. f. 46 (1882).

Head and thorax ochreous mixed with fuscous, patagia with flesh-coloured patches, dorsum of thorax flesh-colour; palpi blackish at

sides, white at tips; tarsi fuscous, with pale rings to the joints; abdomen grey-brown. Fore wing ochreous thickly irrorated with fuscous; a diffused flesh-coloured fascia in basal half of submedian fold; subbasal line double, waved, from costa to submedian fold; antemedial line double, waved, oblique; orbicular and reniform with fuscous centres and flesh-coloured annuli, the former round; a waved medial shade; postmedial line double, the inner dentate, the outer more even, bent outwards below costa, excurved to vein 4, then incurved; subterminal line ochreous, dentate, angled outwards at vein 7 and excurved at middle, defined on inner side by a dark shade, the area beyond it sometimes darker; cilia ochreous, with two fuscous lines through them. Hind wing fuscous brown, paler towards base; the cilia ochreous at base, with fuscous medial line and whitish tips; the underside ochreous whitish with slight dark irroration, a diffused postmedial line and terminal band.

Hab. W. Turkestan, Alexander Mts., 1 ♂, 1 ♀. *Exp.* 44 millim.

857. Episilia psammoda.

Agrotis psammoda, Staud. Iris, viii. p. 355, pl. 6. f. 5 (1895); id. Cat. Lep. pal. p. 148.

Head and thorax white mixed with yellow; pectus, legs, and abdomen white, the last tinged with ochreous at extremity. Fore wing ochreous yellow, the veins whitish; slight streaks of rufous in and below cell, above vein 4, and shorter subterminal streaks from below vein 2 to above 5; reniform obscurely defined by rufous and with fuscous centre; a terminal series of dark points. Hind wing white, the veins slightly tinged with ochreous.

Hab. Mongolia, Uliassutai, 1 ♂, 1 ♀. *Exp.* 40 millim.

Sect. IV. (*Episilia*). Antennæ of male ciliated.

A. Hind wing yellow.
- *a*. Fore wing with the stigmata prominent ..... *anachoreta*.
- *b*. Fore wing with the stigmata obsolescent ..... *luperinoides*.

B. Hind wing not yellow.
- *a*. Fore wing with the cell blackish between the stigmata.
  - a^1. Fore wing with the reniform angled inwards on median nervure.
    - a^2. Fore wing with dentate grey marks on the veins beyond postmedial line..... *stridula*.
    - b^2. Fore wing without dentate grey marks on the veins beyond postmedial line.
      - a^3. Fore wing with the orbicular whitish, open above ..... *voccei*.
      - b^3. Fore wing with the orbicular defined by whitish. *cuprea*.
  - b^1. Fore wing with the reniform not angled inwards on median nervure.
    - a^2. Fore wing purplish brown ..... *præcipua*.
    - b^2. Fore wing pale olive-brown ..... *muscula*.
- *b*. Fore wing with the cell not blackish between the stigmata.
  - a^1. Fore wing with the costal area whitish to the postmedial line; the orbicular V shaped, open above.
    - a^2. Hind wing white ..... *lasciva*.
    - b^2. Hind wing suffused with fuscous ..... *juldussi*.

b^1. Fore wing with the costal area concolorous.
a^2. Fore wing without streaks in interspaces of terminal area.
a^3. Fore wing rufous.
a^4. Fore wing with the stigmata whitish ..... *modesta.*
b^4. Fore wing with the stigmata obsolescent..... *isochroma.*
b^3. Fore wing not rufous.
a^4. Fore wing with white bar on inner edge of reniform ..... *argillacea.*
b^4. Fore wing without white bar on inner edge of reniform.
a^5. Fore wing suffused with purplish pink ..... *violetta.*
b^5. Fore wing slate-grey, with some blood-red suffusion in discal and submedian folds.
a^6. Fore wing dark; hind wing fuscous brown. *alaina.*
b^6. Fore wing paler; hind wing whitish tinged with fuscous ..... *junonia.*
c^5. Fore wing without red suffusion in discal and submedian folds.
a^6. Fore wing with transverse lines.
a^7. Fore wing with the antemedial and subterminal lines defined by slate-grey..... *suavis.*
b^7. Fore wing with the antemedial and subterminal lines not defined by slate-grey.
a^8. Fore wing with the lines not expanding into distinct black spots on costa.
a^9. Fore wing with the lines brown, not strongly contrasting.
a^{10}. Fore wing brownish white ..... *simulatrix.*
b^{10}. Fore wing with the ground-colour pale yellow..... *viscotti.*
c^{10}. Fore wing grey-brown.
a^{11}. Hind wing with the cilia pure white.
a^{12}. Fore wing with grey annuli to stigmata; hind wing without reddish tinge ..... *lucernea.*
b^{12}. Fore wing with fulvous annuli to stigmata; hind wing with reddish tinge ..... *ignobilis.*
b^{11}. Hind wing with the cilia pale brownish..... *helvetina.*
b^9. Fore wing with the lines whitish, distinct ..... *plumbea.*
c^9. Fore wing with the lines blackish, indistinct.
a^{10}. Fore wing with the cilia rufous. *subplumbea.*
b^{10}. Fore wing with the cilia concolorous ..... *quadrangula.*
d^9. Fore wing with the lines blackish, strongly contrasting.
a^{10}. Fore wing with the postmedial line not produced to points on the veins.
a^{11}. Fore wing with the antemedial line double.
a^{12}. Fore wing with the subterminal line distinct whitish. *lætifica.*
b^{12}. Fore wing with the subterminal line indistinct, ochreous ..... *diplogramma.*

b^{11}. Fore wing with the antemedial line single ..... *monogramma.*
b^{10}. Fore wing with the postmedial line produced to points on the veins.
a^{11}. Fore wing reddish brown ..... *ledereri.*
b^{11}. Fore wing grey-brown.
a^{12}. Fore wing with the stigmata distinctly defined ..... *simulans.*
b^{12}. Fore wing with the stigmata indistinctly defined ..... *latens.*
b^{8}. Fore wing with the lines expanding into distinct black spots on costa.
a^{9}. Fore wing with the lines distinct, black ..... *ashworthi.*
b^{9}. Fore wing with the lines indistinct ... *candelarum.*
b^{6}. Fore wing without transverse lines ..... *castra.*
b^{2}. Fore wing with streaks in interspaces of terminal area.
a^{3}. Fore wing with black discoidal point ..... *tiniloides.*
b^{3}. Fore wing without discoidal point ..... *amina.*

858. Episilia anachoreta.

Anarta anachoreta, Herr.-Schäff. Schmett. Eur. ii. pl. 34. ff. 167, 168 (1845); Staud. Cat. Lep. pal. p. 142.

Head and thorax pale rufous; pectus and legs greyish; abdomen clothed with yellowish hair. Fore wing pale rufous, the basal area or the whole wing sometimes with a greyish tinge; an indistinct subbasal line from costa to submedian fold sometimes present; a slightly waved antemedial line bent outwards to inner margin usually present; claviform elongate with pale outline, often defined with black at extremity; orbicular and reniform small, ochreous white, connected by a pale fascia on median nervure which also touches the claviform, and with some black in cell before and between them; the postmedial line minutely dentate, excurved from costa to vein 4, then incurved, defined by a greyish band on its outer side, sometimes extending to its inner side; a minutely dentate subterminal line angled outwards at vein 7. Hind wing orange, with moderately broad terminal black band with slightly sinuous inner edge. Underside of fore wing orange; the costal and terminal areas brown irrorated with greyish.

Hab. Armenia, Caucasus, 7 ♂, 1 ♀. *Exp.* 26–30 millim.

859. Episilia luperinoides.

Anarta chardinyi, Herr.-Schäff. Schmett. Eur. ii. pl. 92. f. 474 (1845), nec Boisd.
Cyrebia luperinoides, Guen. Noct. ii. p. 196, pl. 4. f. 12 (1852); Staud. Cat. Lep. pal. p. 142.

♂. Head and thorax reddish brown with a grey tinge; abdomen black clothed with yellow hair. Fore wing rufous suffused with grey; traces of a subbasal line from costa to submedian fold; an indistinct waved antemedial line bent outwards to inner margin; traces of a greyish claviform stigma sometimes present; orbicular

and reniform indistinct, greyish, sometimes rather more prominent and connected by a fascia on median nervure; the postmedial line minutely dentate, excurved from costa to vein 4, then incurved; an indistinct minutely dentate subterminal line angled outwards at vein 7. Hind wing orange, with moderately broad terminal black band with slightly sinuous inner edge. Underside orange, with some fuscous irroration on costa of fore wing and termen of each wing, the fore wing sometimes with dark streak on median nervure and patch beyond lower angle of cell.

♀. Head, thorax, abdomen, and fore wing more rufous.

Hab. Armenia, Caucasus, 2 ♂, 2 ♀. *Exp.* 28 millim.

Possibly a variety of *E. anachoreta*.

860. Episilia stridula. (Plate LXXIII. fig. 16.)

Agrotis stridula, Staud. ined.

♂. Head and thorax deep red-brown, the hairs tipped with pale brown; tegulæ with black medial band; tibiæ and tarsi blackish; abdomen fuscous brown, with greyish segmental lines. Fore wing reddish brown thickly suffused with fuscous, the veins streaked with greyish; the subbasal line represented by black striæ from costa and cell, filled in with red-brown; the antemedial line black, defined by pale rufous on inner side, angled outwards below costa, emitting an oblique streak to basal line from subcostal nervure, angled inwards on median nervure and very strongly outwards above inner margin, with a black spot on its outer edge at base of claviform, which is finely defined by whitish and black; orbicular and reniform with greyish centres and pale reddish annuli defined by black, the former small, oblique, elliptical, the latter strongly dentate inwards on median nervure, the cell before and between them black; an oblique waved shade from lower angle of cell to inner margin; the postmedial line black, defined by pale reddish on outer side, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved, the veins beyond it defined by reddish dentate marks; the subterminal line indistinct, pale, defined by a series of dentate black marks on inner side, angled outwards at vein 7 and excurved at middle; a dark terminal line and line through the cilia. Hind wing fuscous brown, the cilia pale with a brown line at base; the underside pale, thickly irrorated and suffused with fuscous; an indistinct curved postmedial line.

Hab. W. Turkestan, Turcomania, 1 ♂ type. *Exp.* 36 millim.

861. Episilia voccei. (Plate LXXIII. fig. 17.)

Agrotis wockei, Möschl, Wien. ent. Mon. vi. p. 130, pl. 1. ff. 1, 2 (1862); Staud. Cat. Lep. pal. p. 139.

Agrotis scropulana, Morr. Proc. Bost. Soc. N. H. xvii. p. 165 (1874).

♂. Head and thorax chestnut, tegulæ blackish at extremity and with white lines through them and base of patagia; abdomen fuscous brown, with the hair at sides and extremity fulvous.

Fore wing pale grey-brown, tinged with rufous below the cell on medial area; the subbasal line represented by black points below costa and cell; a wedge-shaped black mark above vein 1 before the indistinct sinuous, oblique, grey antemedial line; claviform elongate, grey defined by black; cell filled in with black defining the grey orbicular and reniform stigmata, the former open above and rather V-shaped, the latter constricted at middle and angled inwards on median nervure; the postmedial line minutely dentate, oblique from costa to vein 8 and at vein 3 inwardly oblique; the subterminal line indistinct, slightly angled outwards at vein 7 and excurved at middle. Hind wing pale grey-brown, with indistinct discoidal lunule and curved postmedial line.

♀. Greyer, without the rufous tints.

Hab. Canada, Labrador, 1 ♀, Grote Coll.; U.S.A., New Hampshire, White Mts., 1 ♂ type *scropulana*; W. Turkestan, Ala Tau. *Exp.*, ♂ 38, ♀ 40 millim.

862. Episilia cuprea.

Noctua cuprea, Schiff. Wien. Verz. p. 91 (1776); Hübn. Samml. Eur. Schmett., Noct. f. 62; Godt. Lép. Fr. ii. p. 197, pl. 63; Staud. Cat. Lep. pal. p. 142.

Noctua hæmatitedea, Esp. Schmett. iv. pl. 182. f. 4 (1786).

Head and thorax red-brown, some of the hairs tipped with grey; abdomen greyish brown, the anal tuft more rufous. Fore wing red-brown; the veins finely streaked with white, the median nervure most prominently so; the subbasal line represented by grey striæ from costa and median nervure with some brown on their inner sides; the antemedial line grey, angled outwards below costa, then incurved and obsolete below vein 1; claviform dark brown defined by white, the cell and area just below and beyond it dark red-brown; the orbicular and reniform defined by white, the former somewhat oblique, elliptical, the latter with white line at centre and often angled inwards on median nervure; the postmedial line minutely waved, bent outwards below costa, slightly incurved at discal fold and strongly below vein 4; the subterminal line defined by dark suffusion on inner side, angled outwards at vein 7 and somewhat dentate at veins 4 and 3; a fine dark terminal line and ochreous line at base of cilia. Hind wing fuscous brown, with a reddish tinge; cilia ochreous; the underside ochreous white, irrorated with reddish brown.

Hab. France, Sand Coll.; Germany, Silesia; Switzerland, Zeller & Frey Colls.; Hungary; Norway, Zeller Coll.; Russia, St. Petersburg, Frey Coll., Urals; Armenia; Kamschatka. *Exp.* 36–40 milim.

863. Episilia præcipua. (Plate LXXIII. fig. 18.)

Agrotis præcipua, Staud. Iris, v. p. 360, pl. 3. f. 5 (1892); id. Cat. Lep. pal. p. 151.

♂. Head and thorax red-brown with a purplish tinge, the head

and tegulæ irrorated with grey; fore tibiæ and tarsi whitish in front; abdomen ochreous whitish, the anal tuft fulvous, the ventral surface reddish brown. Fore wing purplish brown tinged with grey, irrorated with fuscous and suffused with red-brown except on inner area, the costal area suffused with purplish; a blackish streak below base of cell; the antemedial line slightly curved, obsolete below vein 1; orbicular and reniform small, grey, the former oblique, elliptical, the cell before and between them filled in with black-brown; the postmedial line oblique from costa to vein 7, slightly incurved at discal fold, excurved to vein 4, then incurved and produced to slight points at the veins; the subterminal line dark, diffused, angled outwards at vein 7 and excurved at middle; a fine dark terminal line and ochreous line at base of cilia. Hind wing ochreous whitish suffused with fuscous except towards base and inner margin, the cilia ochreous; the underside with the costal area suffused with brown, a slight discoidal point and diffused curved postmedial line.

Hab. W. Siberia, Dauria; Mongolia, Urga; E. Siberia, Kentei, 1 ♂, W. Amurland. *Exp.* 38 millim.

864. Episilia muscula.

Agrotis musculus, Staud. Stett. ent. Zeit. 1889, p. 30; id. Cat. Lep. pal. p. 145.
Agrotis citillus, Alph. Rom. Mém. v. p. 133, pl. 7. f. 2 (1889).

♂. Head and thorax pale reddish brown mixed with fuscous; tarsi with pale rings; abdomen brownish ochreous. Fore wing pale olive-brown, tinged with rufous and irrorated with black; the veins greyish; a subbasal black line from costa to submedian fold, angled below costa and defined by grey on outer side; a double dentate antemedial line strongly angled inwards on vein 1; claviform small, defined by black; orbicular and reniform small, with rufous centres and greyish annuli defined by black, the former round, the latter with some black in lower portion, the cell before and between them black; the postmedial line double, dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale, defined by blackish on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing fuscous brown, reddish towards inner margin; the cilia pale yellow. Underside of fore wing fuscous, with the costal and terminal areas yellowish; hind wing yellowish, with dark discoidal point and indistinct sinuous postmedial and subterminal lines.

Hab. W. Turkestan, Issyk-kul, 1 ♂. *Exp.* 34 millim.

865. Episilia lasciva.

Agrotis lasciva, Staud. Stett. ent. Zeit. 1888, p. 14; Alph. Rom. Mém. v. pl. 8. f. 10; Staud. Cat. Lep. pal. p. 143.

♂. Head and thorax purplish red; tegulæ with the basal half

ochreous white, the tips bright red-brown; abdomen ochreous, rufous towards extremity and on ventral surface. Fore wing purplish red; the costal area ochreous white to postmedial line, extending to just below cell at base; the median nervure with whitish streak; an olive-brown subbasal patch below the cell; the antemedial line obsolete above median nervure, excurved below cell and above inner margin, angled inwards on vein 1; claviform small, indistinct, greyish, defined by brown above; orbicular ochreous white, triangular and confluent with costal area; reniform with greyish centre and ochreous annulus; the cell before and between the stigmata olive-brown; the postmedial line very indistinct, bent outwards below costa, excurved to vein 4, then oblique, the area beyond it paler; the subterminal line indistinct, angled outwards at vein 7 and excurved at middle. Hind wing ochreous white; the underside with the costal area irrorated with rufous.

Hab. W. Turkestan, Ferghana, Turcomania, 1 ♂. *Exp.* 40 millim.

866. Episilia juldussi.

Agrotis juldussi, Alph. Hor. Soc. Ent. Ross. xvii. p. 49, pl. 3. f. 59 (1882); Staud. Cat. Lep. pal. p. 143.

♂. Head and thorax purplish red; tegulæ with whitish medial line and dark brown tips; abdomen rufous. Fore wing purplish red, the disk suffused with red-brown; the costal area ochreous to the postmedial line, extending to just below cell at base; a subbasal red-brown patch below the cell; the antemedial line very indistinct, oblique from cell to inner margin, obsolete on costal area; orbicular ochreous, V-shaped, confluent with costal area; reniform with greyish centre and ochreous annulus; the cell before and between the stigmata red-brown; traces of an oblique medial line from cell to inner margin; the postmedial line indistinct, excurved from costa to vein 4, then oblique; the subterminal line indistinct, greyish, slightly angled outwards at vein 7 and excurved at middle; a fine terminal dark line. Hind wing fuscous brown, the cilia pale rufous; the underside pale ochreous brown, the costal area tinged with red, a dark discoidal point and indistinct curved postmedial line.

Hab. W. Turkestan, Ferghana, Issyk-kul, 4 ♂; E. Turkestan, Kuldja, 1 ♂. *Exp.* 34 millim.

867. Episilia modesta. (Plate LXXIII. fig. 19.)

Agrotis modesta, Staud. Iris, viii. p. 309 (1895); id. Cat. Lep. pal. p. 141.

♂. Head and tegulæ deep red-brown; thorax pinkish rufous; legs rufous, the tarsi with ochreous rings; abdomen ochreous, the ventral surface rufous. Fore wing pinkish rufous, irrorated with a few white scales; subbasal line indistinct, double, from costa to submedian fold, filled in with white scales; antemedial line double at costa, then indistinct, single, and defined by whitish on outer side; orbicular and reniform small, with slight rufous centres and

ochreous-white annuli, the former round; a slight medial shade; postmedial line double, minutely dentate, bent outwards below costa, somewhat incurved at discal fold and strongly below vein 4; subterminal line indistinct, pale, somewhat dentate, angled outwards at vein 7 and excurved at middle, defined at costa on inner side by a blackish patch with pale points on it; a terminal series of dark points. Hind wing ochreous; cilia pale rufous, the underside with the costal area tinged with rufous.

Hab. Tibet, Kuku-noor, 1 ♂, Amdo. *Exp.* 32 millim.

868. **Episilia isochroma**, n. sp. (Plate LXXIII. fig. 20.)

Head and thorax rufous; abdomen greyish ochreous, the anal tuft and ventral surface rufous. Fore wing ferruginous red, with a few silvery-blue scales on inner and terminal areas; orbicular represented by an obscure dark point, the reniform by a slight lunule; faint traces of a postmedial line bent outwards below costa, incurved at discal fold and below vein 4; traces of a subterminal line angled outwards at vein 7 and excurved at middle. Hind wing ochreous white; the costal area slightly tinged with fuscous and the terminal area in female; cilia pale rufous; the underside with slight discoidal point and traces of postmedial line.

Hab. Tibet, Yatung (*Hobson*), 1 ♂, 1 ♀ type. *Exp.*, ♂ 28, ♀ 30 millim.

869. **Episilia argillacea.** (Plate LXXIII. fig. 21.)

Eicomorpha argillacea, Alph. Hor. Soc. Ent. Ross. xxvi. p. 445 (1892); Staud. Cat. Lep. pal. p. 141.
Agrotis decolor, Staud. Iris, viii. p. 307 (1895).

♂. Head and thorax pale grey-brown; abdomen ochreous. Fore wing pale grey-brown, irrorated with a few dark scales; traces of waved brown subbasal and antemedial lines; orbicular a small elliptical white annulus; reniform indistinct, with a white bar on its inner edge; faint traces of a postmedial line; a terminal series of black points. Hind wing ochreous white with a brownish tinge; the underside with the costal area irrorated with brown, a small discoidal spot and terminal series of points.

Hab. Tibet, Kuku-noor, 1 ♂, Amdo. *Exp.* 34 millim.

870. **Episilia violetta.** (Plate LXXIII. fig. 22.)

Agrotis violetta, Staud. Stett. ent. Zeit. 1888, p. 3; id. Cat. Lep. pal. p. 144.

Head and thorax grey, suffused with purplish pink; pectus, legs, and abdomen whitish. Fore wing grey, suffused with purplish pink and slightly irrorated with fuscous; an indistinct waved subbasal line from costa to submedian fold; an indistinct double waved antemedial line; claviform an indistinct pale dash; orbicular and reniform with fuscous centres and whitish annuli, the former small, rounded; postmedial line dentate and produced to white points on

the veins, defined by pale pinkish on outer side, bent outwards below costa, excurved to vein 4, then incurved; an indistinct subterminal line angled outwards at vein 7 and excurved at middle; a terminal series of dark points sometimes present; a fine ochreous line at base of cilia. Hind wing white, the veins and terminal area suffused with pale brown; the underside whiter, a dark discoidal lunule and curved postmedial series of points on the veins.

Hab. W. Turkestan, Ferghana, Turcomania, 1 ♂, 1 ♀. *Exp.*, ♂ 40, ♀ 46 millim.

871. Episilia alaina. (Plate LXXIII. fig. 23.)

Agrotis alaina, Staud. Stett. ent. Zeit. 1888, p. 5; id. Cat. Lep. pal. p. 144.

Head and thorax grey mixed with blackish, the base of tegulæ and patagia and the slight pro- and metathoracic crests ochreous tinged with pink; abdomen grey, tinged with ochreous brown. Fore wing slate-grey; the discal and subterminal folds suffused with blood-red from the antemedial to the subterminal line; the subbasal line double, waved, from costa to submedian fold; the antemedial line double, irregularly dentate and filled in with ochreous; orbicular and reniform defined with ochreous, the former round; the postmedial line slightly defined by ochreous on outer side, dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line ochreous, minutely waved, angled outwards at vein 7 and excurved at middle; a terminal series of dark points; cilia brown. Hind wing fuscous brown; the cilia brown; the underside ochreous whitish, a fuscous lunule and somewhat sinuous postmedial line.

Hab. W. Turkestan, Turcomania, 1 ♂, 1 ♀, Ferghana; E. Turkestan, Korla. *Exp.* 40 millim.

872. Episilia junonia.

Agrotis junonia, Staud. Stett. ent. Zeit. 1881, p. 415; Alph. Rom. Mém. v. pl. 8. f. 7; Staud. Cat. Lep. pal. p. 144.

Head and thorax white, mixed with grey and more or less strongly tinged with fulvous or blood-red; tarsi banded with black; abdomen whitish, tinged with ochreous brown. Fore wing ochreous white, more or less strongly and completely irrorated and suffused with blue-grey, and with some pale fulvous or blood-red suffusion in submedian and discal folds; a double waved grey subbasal line from costa to submedian fold; an irregularly dentate whitish antemedial line defined on each side by blue-grey, more strongly angled inwards on vein 1; orbicular and reniform blue-grey defined by whitish, the former small, round; the postmedial line dentate and produced to points on the veins, blue-grey, defined by whitish on outer side, bent outwards below costa, excurved to vein 4, then incurved; subterminal line waved, whitish, excurved at vein 7 and middle; cilia pale brown. Hind wing whitish, suffused with fuscous brown;

the cilia whitish; underside white irrorated with brown, a dark discoidal spot and sinuous postmedial line.

Hab. W. Turkestan, Turcomania, Kuruk Tag, 1 ♂, 1 ♀, Tarbagatai Mts., Issyk-kul, 1 ♂. *Exp.* 48 millim.

873. Episilia suavis.

Ammogrotis suavis, Staud. Iris, viii. p. 358, pl. 6. f. 11 (1895); id. Cat. Lep. pal. p. 178.

♂. Head and thorax clothed with ochreous white mixed with black hair; palpi blackish at sides; tarsi banded with black; abdomen ochreous white, the ventral surface irrorated with brown. Fore wing white, tinged with ochreous and irrorated with black; a blackish subbasal line from costa to submedian fold, angled outwards below costa; an oblique waved blackish antemedial line arising from a small black spot on costa; the claviform diffusedly defined by blackish; orbicular represented by a small blackish spot; reniform diffused blackish, with diffused spot above it on costa and another on its outer edge; postmedial line indistinct, dentate, with more prominent points at the veins, arising from a black spot on costa, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line dentate, irregularly diffused on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black striæ. Hind wing ochreous white, slightly irrorated with fuscous; slight spots on the veins beyond lower angle of cell; a diffused subterminal band. Underside of fore wing with the disk suffused with fuscous.

Hab. Mongolia, Uliassutai Mts., 1 ♂, Korla. *Exp.* 46 millim.

874. Episilia simulatrix.

Noctua simulatrix, Hübn. Samml. Eur. Schmett., Noct. f. 712 (1827); Geyer, Samml. Eur. Schmett., Noct. f. 712.

Agrotis nictymera, Boisd. Icones, pl. 78. ff. 1, 2 (1832); Dup. Lép. Fr. Suppl. iii. p. 604, pl. 50. f. 3; Herr.-Schäff. Schmett. Eur., Noct. f. 171; Staud. Cat. Lep. pal. p. 143.

Agrotis dalmata, Staud. Cat. Lep. pal. p. 143 (1901).

♂. Head, thorax, and abdomen brownish white. Fore wing brownish white; an indistinct double, waved, subbasal line from costa to submedian fold; a double, waved, antemedial line angled inwards on median nervure and vein 1; a waved medial shade angled outwards on median nervure; reniform very indistinctly defined with brownish; a strongly dentate postmedial line bent outwards below costa, excurved to vein 4, then incurved; the subterminal line defined by a fuscous shade on its inner side, angled outwards at vein 7 and excurved at middle; cilia whitish, with a brown line through them. Hind wing ochreous whitish, the terminal half suffused with brown; the cilia white; the underside white, irrorated with pale brown and suffused with fuscous towards termen, a dark discoidal spot and sinuous postmedial line.

Ab. 1. *dalmata*. Ground-colour rather more ochreous.

Hab. FRANCE, Centr. & S. East, 2 ♂ ; SPAIN, Centr. ; DALMATIA, 1 ♂ ; ASIA MINOR, Pontus, Taurus. *Exp.* 44 millim.

Larva. Bruand, Ann. Soc. Ent. Fr. (2) ii. p. 192, pl. 6. f. C (1844).

Black, greenish on lateral and ventral surfaces ; subdorsal stripe bordered above by three white striæ on each somite. Food-plant, *Festuca ovina*. 4.

875. Episilia viscotti.

Agrotis viskotti, Stndf. Iris, i. p. 212, pl. 10. ff. 3, 4, & xi. f. 2 (1888) ; Rebel, Verh. zool.-bot. Ges. Wien, 1899, p. 164, pl. 4. f. 3 ; Staud. Cat. Lep. pal. p. 145.

♂. Head, thorax, and abdomen pale yellow mixed largely with fuscous ; tarsi fuscous, with yellow rings. Fore wing pale yellow, thickly irrorated with fuscous ; subbasal line indistinct from costa to submedian fold, defined by yellowish on outer side ; antemedial line fuscous, defined by yellow on inner side, highly waved, nearly erect ; claviform and orbicular obsolete ; reniform a small fuscous lunule with greyish centre ; medial shade waved ; postmedial line defined by yellowish on outer side, strongly dentate, bent outwards below costa, incurved at discal fold and strongly below vein 4 ; subterminal line yellowish, strongly defined by fuscous on inner side, angled outwards at vein 7 and excurved at middle ; cilia chequered fuscous and yellow. Hind wing yellowish white, tinged with fuscous brown except towards base ; cilia pale yellow ; the underside pale yellow, with some fuscous suffusion on inner area, a discoidal point and curved postmedial line.

♀ rather yellower.

Hab. SWITZERLAND, High Alps, 1 ♀, Zeller Coll. *Exp.*, ♂ 42, ♀ 46 millim.

876. Episilia lucernea.

Noctua lucernea, Linn. Syst. Nat. i. p. 510 (1757) ; Staud. Cat. Lep. pal. p. 143.

Graphiphora renigerâ, Steph. Ill. Brit. Ent., Haust. ii. p. 129 (1827).

Noctua cataleuca, Boisd. Ann. Soc. Ent. Fr. 1833, p. 377, pl. 14. f. 2 ; id. Icones, pl. 82. ff. 5, 6 ; Dup. Lép. Fr., Suppl. iii. pl. 19. f. 3 ; Herr.-Schäff. Schmett. Eur., Noct. ff. 574–5.

Head and thorax brownish grey, the hairs tipped with grey ; abdomen pale brown, the ventral surface whitish. Fore wing grey irrorated with brown, the terminal area darker ; the subbasal line pale, waved from costa to submedian fold ; the antemedial line waved, angled outwards in submedian fold and defined by grey on inner side ; orbicular and reniform small, with grey annuli, the former round ; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved, defined by grey on outer side ; the subterminal line indistinct, dentate, angled outwards at vein 7 and excurved at middle. Hind wing fuscous brown, paler towards base ; cilia white ; the underside white irrorated with brown, the terminal area more or less completely suffused with fuscous, a dark discoidal point.

Ab. 1. *renigera*. Much darker.—Scotland and mountains of England.

Hab. Britain, Scotland, England, Wales, Ireland, Leech Coll.; France, Sand Coll., Pyrenees; Switzerland, Engadine, Frey Coll.; Scandinavia; Russia, Finland, Zeller Coll. *Exp.* 38–40 millim.

Larva. Meyr. Brit. Lep. p. 97; Barrett, Lep. Brit. iii. p. 390, pl. 136. f. 3. Fuscous, with subdorsal series of dark fuscous dentate marks with pale spots behind them; head fuscous, with black markings. Food-plants: *Sedum*, *Stellaria*, *Campanula*. 9–4.

*877. Episilia ignobilis. (Plate LXXIII. fig. 24.)

Agrotis ignobilis, Staud. Stett. ent. Zeit. 1888, p. 7; id. Cat. Lep. pal. p. 145.

♂. Head and thorax grey, the hair tipped with dark brown, the tegulæ tinged with rufous; abdomen grey mixed with fuscous. Fore wing grey, thickly irrorated with fuscous and with a slight fulvous tinge in discal and submedian folds; a double, waved, subbasal line from costa to submedian fold; a double, waved, oblique antemedial line; orbicular and reniform with pale fulvous annuli defined by fuscous, the former rather small, round, the latter narrow and with fuscous centre; medial shade black, prominent, angled at median nervure; postmedial line double, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line pale, dentate, defined by fuscous suffusion on inner side; a fine pale line at base of cilia. Hind wing pale with a rufous tinge; the terminal area broadly fuscous from costa to submedian fold; cilia white, yellowish at base; the underside grey, thickly irrorated with fuscous, a sinuous postmedial line, the area beyond it suffused with fuscous.

Hab. W. Turkestan, Issyk-kul, Alexander Mts., in Coll. Püngeler. *Exp.* 42 millim.

878. Episilia helvetina.

Noctua birivia, Hübn. Samml. Eur. Schmett., Noct. f. 42 (nec Schiff.).
Noctua helvetina, Boisd. Ann. Soc. Ent. Fr. 1833, p. 376, pl. 14. f. 3; id. Icones, pl 82. f. 4; Dup. Lép. Fr., Suppl. iii. p. 207, pl. 19. f. 4; Herr.-Schäff. Schmett. Eur. ii. p. 334, pl. 3. ff. 12–14; Staud. Cat. Lep. pal. p. 144.
Noctua livia, Frey. Beitr. iii. pl. 201 (1836).

Head and thorax brown, the hairs tipped with grey-white; abdomen brown, with an ochreous tinge towards extremity in male. Fore wing ochreous brown, suffused with smooth leaden-grey; an indistinct antemedial line excurved from costa to submedian fold, then angled inwards on vein 1; orbicular and reniform slightly defined with whitish, the former small, elliptical; the postmedial line indistinct, dentate, bent outwards below costa, excurved to vein 4, then incurved; hardly a trace of the subterminal line. Hind wing dull brown suffused with grey, the cilia ochreous at base, grey at tips; the underside whitish, irrorated with yellow-brown, a curved postmedial line.

Hab. Alps of S. France, Leech Coll.; Germany; Austria; Switzerland, Zeller & Frey Colls.; N. Italy; Armenia. *Exp.* 50 millim.

879. Episilia plumbea.

Agrotis plumbea, Alph. Stett. ent. Zeit. 1887, p. 163; id. Rom. Mém. v. p. 136, pl. 6. f. 4; Staud. Cat. Lep. pal. p. 144.

♂. Head and thorax fuscous black, the hairs tipped with grey; legs brownish; abdomen whitish, tinged with pale rufous towards extremity and on ventral surface. Fore wing leaden-fuscous, slightly irrorated with grey-white; a whitish subbasal line from costa to submedian fold; an indistinct diffused oblique waved antemedial whitish line; claviform obscurely defined by whitish; orbicular and reniform defined by white, the former small, round; postmedial line dentate, whitish, bent outwards below costa, excurved to vein 4, then incurved; an indistinct dentate whitish subterminal line angled outwards at vein 7 and excurved at middle; a terminal series of black points; cilia pale ochreous brown. Hind wing white, slightly tinged with fuscous, the terminal area suffused with fuscous; cilia white; the underside with discoidal point and curved postmedial line obsolete except towards costa.

Hab. W. Turkestan, Ferghana, Issyk-kul; E. Turkestan, Ili; Mongolia, Uliassutai Mts., 1 ♂. *Exp.* 44 millim.

880. Episilia subplumbea. (Plate LXXIII. fig. 25.)

Agrotis subplumbea, Staud. Iris, viii. p. 310 (1895); Staud. Cat. Lep. pal. p. 144.

♂. Head and thorax black-brown, the hairs slightly tipped with grey; antennæ rufous; abdomen ochreous, the ventral surface strongly irrorated with dark brown. Fore wing black-brown, slightly irrorated with grey; traces of a waved subbasal line from costa to submedian fold; an indistinct waved antemedial line; orbicular and reniform blackish defined by greyish annuli, the former rather small, round; postmedial line indistinct, dentate, bent outwards below costa, excurved to vein 4, then incurved; cilia rufous. Hind wing whitish, the terminal area broadly suffused with fuscous; cilia ochreous; the underside whiter, the costal and terminal areas irrorated with brown, a discoidal point and curved postmedial line almost obsolete except towards costa.

Hab. Tibet, Kuku-noor, 1 ♂, Amdo. *Exp.* 44 millim.

881. Episilia quadrangula.

Agrotis quadrangula, Zett. Ins. Lap. p. 935 (1840); Staud. Cat. Lep. pal. p. 146.

Agrotis rava, Herr.-Schäff. Schmett. Eur. vi. p. 59, Suppl. f. 544 (1850); Smith, Cat. Lep. N. Am. p. 73.

Agrotis umbratus, Pack. Proc. Bost. Soc. N. H. xi. p. 37 (1867).

♂. Pale grey-brown. Fore wing with some dark irroration; traces of a dark streak below base of cell and subbasal line; the

antemedial line acutely angled inwards in cell and on vein 1, excurved below costa and cell and angled outwards above inner margin; claviform elongate, slightly defined by dark scales; orbicular and reniform slightly defined by dark scales, the cell between

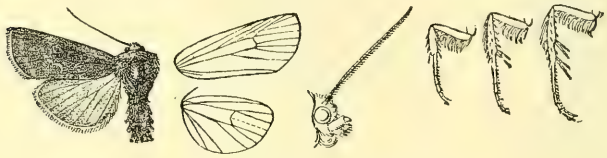


Fig. 87.—*Episilia quadrangula*, ♂. ½.

them blackish, the former round, the latter open above and below; a patch of blackish scales beyond the cell; the postmedial line highly dentate, bent outwards below costa, excurved to vein 4, then oblique; faint traces of a subterminal line. Hind wing grey suffused with fuscous brown; the cilia ochreous white; the underside with discoidal spot and diffused waved postmedial and subterminal lines.

Hab. Greenland; Canada, Labrador, 1 ♂, Nova Scotia; Iceland (*Walker*), 1 ♂, 3 ♀. *Exp.* 40 millim.

882. Episilia lætifica.

Agrotis lætifica, Staud. Stett. ent. Zeit. 1889, p. 29; Alph. Rom. Mém. ix. pl. 13. f. 10; Staud. Cat. Lep. pal. p. 144.

♂. Head and thorax clothed with grey and dark brown hair; abdomen whitish dorsally suffused with fuscous. Fore wing clothed with white and black scales, the interspaces ochreous except towards costa and inner margin; a waved dark subbasal line from costa to submedian fold; a double waved antemedial line; orbicular and reniform with fuscous centres and whitish annuli, the former round; postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; a whitish subterminal line defined by fuscous on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing white tinged with fuscous especially towards termen; the cilia white; the underside white, the costal area irrorated with brown, a discoidal point and postmedial series of slight streaks on the veins.

Hab. Mongolia, Uliassutai Mts., 1 ♂, Changhai Mts., Ili. *Exp.* 46 millim.

883. Episilia diplogramma, n. sp. (Plate LXXIII. fig. 26.)

Head and thorax grey mixed with fuscous and ochreous; palpi blackish at sides; abdomen brownish grey; tarsi fuscous, with ochreous rings. Fore wing grey, mixed with ochreous and irrorated and suffused with fuscous; subbasal line indistinct, double, waved,

from costa to submedian fold; antemedial line double, oblique, waved; orbicular and reniform small, very indistinct, with fuscous centres and ochreous annuli, the former oblique, elliptical; a diffused curved medial shade; postmedial line dentate, defined by ochreous on outer side, oblique from costa to vein 7, excurved to vein 4, then incurved; subterminal line represented by a series of slight ochreous points, with an obscure series of dentate dark marks before them. Hind wing fuscous with an ochreous tinge, the cilia ochreous at base, whitish at tips; the underside whitish, the costal and terminal areas irrorated with fuscous, traces of a postmedial curved line most distinct on costal area.

Hab. W. Turkestan, Aschabad, 1 ♂, 1 ♀ type. *Exp.* 32 millim.

884. **Episilia monogramma**, n. sp. (Plate LXXIII. fig. 27.)

Head and thorax grey pencilled with brown, sometimes suffused with fuscous; abdomen brownish grey. Fore wing brownish grey, thickly irrorated with black; a waved subbasal line from costa to submedian fold; an oblique waved antemedial line; orbicular and reniform greyish, with pale annuli defined by blackish, the former elliptical; a waved diffused medial shade angled outwards to lower angle of cell; the postmedial line strongly dentate, bent outwards below costa, excurved to vein 4, then incurved; an indistinct dentate subterminal line angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing grey suffused with fuscous brown; cilia whitish, sometimes with a brown line through them; the underside whitish, the costal area irrorated with brown, a dark discoidal spot and diffused curved postmedial line.

Hab. Kashmir, Kuijar (*McArthur*), 2 ♂, 1 ♀ type, Barra Larcha (*McArthur*), 1 ♀. *Exp.* 34–42 millim.

885. **Episilia ledereri.**

Agrotis ledereri, Ersch. Trudui Russ. Ent. Obsh. iv. p. 195 (1867); Rom. Mém. ii. p. 209, pl. 16. f. 4; Staud. Cat. Lep. pal. p. 146.
Agrotis mus, Alph. Hor. Soc. Ent. Ross. xvii. p. 58, pl. 2. f. 50 (1882).

Head and thorax yellow-brown; abdomen ochreous. Fore wing yellow-brown; the subbasal line represented by small black spots below costa and cell; the antemedial line indistinct, waved, with prominent black points at costa, median nervure, submedian fold, and vein 1; orbicular and reniform very faintly and incompletely defined by black; traces of a waved medial line excurved to lower angle of cell; postmedial line indistinct, dentate and produced to a prominent series of black points at the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line formed of small dentate black marks, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pale ochreous, tinged with fuscous especially towards termen; cilia ochreous white; the underside paler, with dark discoidal point and curved postmedial line.

Ab. 1. *mus.* Head, thorax, and fore wing darker brown.

Hab. W. Turkestan, Issyk-kul; E. Turkestan, Ili, Thian-Shan Mts.; Mongolia, Uliassutai Mts.; S.E. Siberia, Kentei, Amurland, 1 ♂, 1 ♀. *Exp.* 36 millim.

886. Episilia simulans.

Noctua simulans, Hüfn. Berl. Mag. iii. p. 396 (1767); Staud. Cat. Lep. pal. p. 143.
Noctua pyrophila, Schiff. Wien. Verz. p. 71 (1776); Hübn. Eur. Schmett., Noct. f. 43; Herr.-Schäff. Schmett. Eur., Noct. p. 334; Steph. Ill. Brit. Ent., Haust. ii. p. 130.
Noctua tristis, Fabr. Sp. Ins. ii. p. 238 (1784).
Noctua radicea, Esp. Schmett. iv. pl. 143. ff. 1, 2 (1786).
Agrotis obscurata, Staud. Cat. Lep. pal. p. 143 (1901).

Head, thorax, and abdomen grey or ochreous, mixed with brown or fuscous; palpi blackish at sides except at tips; tarsi blackish, with pale rings. Fore wing grey or ochreous brown, thickly irrorated with dark brown; a double, waved, subbasal line from costa to submedian fold; a waved antemedial line angled inwards on median nervure and vein 1; orbicular and reniform with fuscous-irrorated centres and ochreous annuli, slightly defined by black, a waved dark medial shade passing between them, the former round; a highly dentate postmedial line produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; subterminal line greyish, somewhat dentate and defined by a series of small dentate black marks on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing fuscous brown; the cilia yellowish white; the underside whitish, the costal area yellowish irrorated with brown, the terminal area suffused with fuscous, a dark discoidal point and curved postmedial line.

Ab. 1. *obscurata.* Darker; fore wing blackish grey.

Hab. Britain, Scotland, Leech Coll.; France, Sand Coll.; Germany, Zeller & Frey Colls.; Austria, Leech Coll.; Switzerland, Leech Coll.; Denmark; Finland; Algeria; Armenia; Kurdistan; W. Turkestan, Ferghana, Issyk-kul, 1 ♂, 1 ♀; E. Turkestan, Ili; W. Siberia, Altai. *Exp.* 44–48 millim.

Larva. Meyr. Brit. Lep. p. 98; Barrett, Lep. Brit. iii. p. 377, pl. 135. f. 2.

Fuscous brown; dorsal line fine, indistinct, pale, with a darker line on each side, and with a series of dorsal V-shaped marks; subdorsal area brownish flesh-colour, with some dark irroration; a white lateral fascia interrupted at 2nd and 5th to terminal somites by black marks. Food-plants: grasses, dandelion, dock, knot-grass, groundsel, etc. 8–6.

887. Episilia latens.

Noctua latens, Hübn. Samml. Eur. Schmett., Noct. f. 419 (1827); Dup. Lép. Fr. vi. p. 29, pl. 73; Boisd. Icones, pl. 80. f. 1; Herr.-Schäff. Eur. Schmett., Noct. p. 332; Staud. Cat. Lep. pal. p. 145.

Noctua murina, Frey. Neu. Beitr. Schmett. iv. pl. 364. f. 1 (1842).
Agrotis latitans, Guen. Noct. i. p. 308 (1852).

Head and thorax grey and pale brown, the hairs tipped with grey; palpi fuscous at sides; tibiæ and tarsi mostly fuscous; abdomen pale, thickly irrorated with fuscous brown. Fore wing grey or pale brownish, thickly irrorated with black; a double, waved, subbasal line from costa to submedian fold; a waved antemedial line angled inwards on median nervure and vein 1; orbicular and reniform indistinct or hardly defined except by a quadrate fuscous spot between them, sometimes forming part of a diffused medial shade; postmedial line highly dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct, pale, defined by fuscous suffusion on its inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points usually present. Hind wing fuscous brown, often whitish except terminal area; cilia white; the underside whitish more or less irrorated with brown, a curved postmedial line and diffused terminal band.

Hab. France, Sand Coll.; Germany, Zeller Coll.; Austria; Hungary; Switzerland, Frey Coll.; Italy; Norway, Leech Coll. *Exp.* 34–40 millim.

888. Episilia ashworthi.

Agrotis ashworthii, Doubl. Zool. 1855, p. 4749; Staud. Cat. Lep. pal. p. 139.
Spælotis vallesiaca, Staint. Ann. 1855, p. 41, f. 2 (nec Boisd.).

Head and thorax grey mixed with fuscous; palpi black, grey at tip; abdomen grey. Fore wing grey irrorated with fuscous; a waved subbasal black line from costa to submedian fold, angled outwards below costa; a minutely waved antemedial line angled inwards on vein 1; orbicular and reniform with fuscous centres and grey annuli, the former round; a diffused sinuous medial shade; the postmedial line strongly dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line defined by fuscous on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points; cilia fuscous. Hind wing pale, suffused with reddish brown, the cilia whitish; the underside whitish irrorated with brown, a curved postmedial line.

Hab. Britain, N. Wales (*Salvage*, *Doubleday*). *Exp.* 35–40 millim.

Larva. Meyr. Brit. Lep p 97; Barrett, Lep. Brit. iii. p. 183, pl. 136. f. 2.
Dull dark grey-green, blackish grey, or fuscous; a subdorsal series of narrow rectangular black marks; head red-brown. Food-plants: *Helianthemum*, *Hieracium*, *Salix*, etc. 9–5.

889. Episilia candelarum.

Noctua candelisequa, Hübn. Eur. Schmett., Noct. f. 397 (1827), nec Hübn., Vög. & Schm.; Dup Lép. Fr. vi. pl. 77. f. 2.
Agrotis candelarum, Staud. Cat. Lep. p. 82 (1871); id. Cat. Lep. pal. p. 139.

Agrotis signata, Staud. Cat. Lep. p. 82 (1871).
Agrotis jotunensis, Auriv. Nord. Fjär. p. 122 (1888).

Head and thorax white to pale purplish brown, largely mixed with grey; palpi brown except at tips; abdomen white, tinged with brown or ochreous. Fore wing grey-white, more or less tinged with ochreous brown, and with some darker irroration and dark spots on costa at the lines; a waved dark subbasal line from costa to submedian fold; a waved dark antemedial line angled outwards below costa; orbicular and reniform faintly defined by brownish, the former rounded; a diffused curved medial line; the postmedial line fairly prominent or almost obsolete, dentate and produced to points at the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line indistinct, slightly defined by brown on inner side, angled outwards at vein 7 and excurved at middle. Hind wing white, suffused with ochreous brown especially towards termen; the underside white, the costal and terminal areas irrorated with brown.

Ab. 1. *jotunensis*. Darker.

Ab. 2. *signata*. Paler, the postmedial dentate line very prominent.

Hab. FRANCE, Leech Coll.; GERMANY, Zeller & Frey Colls.; AUSTRIA; SWITZERLAND; SCANDINAVIA; RUSSIA, Livonia, Zeller Coll., Urals; BALKAN STATES; BYTHINIA; W. TURKESTAN, Turcomania; TIBET, Amdo. *Exp.* 44–46 millim.

*890. Episilia castra. (Plate LXXVII. fig. 30.)

Leucania castra, Schaus, Trans. Am. Ent. Soc. xxi. p. 233 (1894).

♂. Head and thorax white tinged with ochreous; sides of palpi and frons black; pro- and metathorax with black marks; abdomen ochreous, ventrally irrorated with fuscous. Fore wing ochreous white, sparsely irrorated with black; a black fascia on median nervure and vein 4 from base to near termen; the orbicular and reniform represented by small round black spots; a terminal series of small black spots. Hind wing yellowish white, with some black points on termen.

Hab. BRAZIL, Castro Paraña, type † ♂ in Coll. Schaus. *Exp.* 34 millim.

*891. Episilia tiniloides. (Plate LXXIII. fig. 28.)

Leucania tiniloides, Dognin, Ann. Soc. Ent. Belg. xli. p. 244 (1897), ♀.
Leucania sagitta, Dognin, Ann. Soc. Ent. Belg. xli. p. 244 (1897), ♂.

♀. Head pale reddish brown; palpi dark red-brown, pale at tips; tegulæ grey at base, with white medial line followed by black, brown at tips; thorax pale grey-brown; fore tibiæ and tarsi whitish above; abdomen grey, dorsally tinged with fuscous. Fore wing brownish grey; the median nervure white, the other veins brown, defined on each side by fine grey streaks; the inner and terminal areas tinged with rufous; a black streak below basal half of cell;

a black discoidal point; a curved postmedial series of black points on the veins; a terminal series of points; an oblique brown shade from termen below apex, and another above tornus. Hind wing semihyaline white, with terminal series of fuscous points; the underside with the costal area sparsely irrorated with black, a black discoidal point and terminal series.

♂. Ground-colour of fore wing straw-yellow; the veins slightly defined; a rufous streak in lower end of cell; the brown patches on termen more prominent.

Hab. Ecuador, Loja, 1 ♀ type †, 1 ♂ type † *sagitta*, in Coll. Dognin. *Exp.* 32 millim.

*892. Episilia amina. (Plate LXXIII. fig. 29.)

Leucania amina, Dognin, Ann. Soc. Ent. Belge, xli. p. 246 (1897).

♀. Head pale reddish brown; thorax brownish grey; abdomen grey dorsally tinged with fuscous. Fore wing grey, suffused with pale reddish brown except the costal area; the veins except on inner area defined by slight whitish streaks; a terminal series of black points. Hind wing semihyaline white, the veins, costal and inner areas tinged with brown; a terminal series of brown striæ. Underside of fore wing with the disk suffused with ferruginous; hind wing with the costal area irrorated with brown.

Hab. Ecuador, Loja, type † ♀ in Coll. Dognin. *Exp.* 40 millim.

Genus NYSSOCNEMIS.

	Type.
Nyssocnemis, Led. Noct. Eur. p. 117 (1857).....	*obesa*.

Proboscis fully developed; palpi upturned, reaching vertex of head, the 2nd and 3rd joints clothed with long hair in front; frons smooth; eyes large, round; antennæ of male bipectinate with rather long branches to apex, of female with short branches ending in a bristle; head and thorax clothed with thick hair and scales, the pro- and mesothorax with spreading crests; all the tibiæ with fine spines; abdomen with lateral tufts of hair towards extremity. Fore wing short and broad; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

893. Nyssocnemis obesa.

Noctua obesa, Ev. Bull. Soc. Imp. Mosc. iii. p. 86, pl. 2. f. 2 (1846); Staud. Cat. Lep. pal. p. 185.
Hadena eversmanni, Led. Zool.-bot. Ver. 1853, pl. 3. f. 1.
Hadena ledereri, H.-S. Eur. Schmett. ii. Index, p. 31 (1856).
Valeria spilogramma, Rambr. Ann. Soc. Ent. Fr. 1871, p. 321; Staud. Cat. Lep. pal. pp. 168, 255.

Head and thorax dark red-brown, some of the scales tipped with grey and black; tarsi with pale rings; abdomen grey-brown tinged with fuscous. Fore wing red-brown with a purplish tinge; a waved subbasal black line from costa to submedian fold; an oblique antemedial line angled outwards below costa and excurved above inner margin; claviform more or less prominently defined by black

and with some black suffusion below it; orbicular oblique elliptical, with oblique black striga from costa above it; reniform narrow, creamy white, with the centre defined by red-brown; an indistinct waved medial line with the area beyond it suffused with black; the

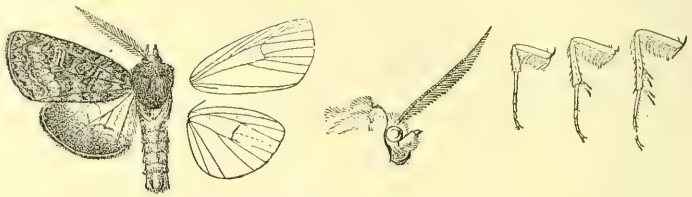


Fig. 88.—*Nyssocnemis obesa*, ♂. ½.

postmedial line dentate, bent outwards below costa, excurved to vein 4, then strongly incurved; the subterminal line ochreous, with black suffusion on its inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing yellowish white, the terminal area fuscous brown, broadly so at costa, narrowing to a point at tornus; the underside with the costal area irrorated and suffused with brown, a slight discoidal striga and indistinct postmedial line.

Hab. S. Russia; W. Siberia, Altai, 2 ♀; E. Siberia, 4 ♂, 3 ♀, Zeller Coll., Amurland, 2 ♂. *Exp.* 40–46 millim.

Genus **LYCOPHOTIA.**

	Type.
Lycophotia, Hübn. Verz. p. 215 (1827)	*porphyria.*
Hapalia, Hübn. Verz. p. 220 (1827)	*præcox.*
Peridroma, Hübn. Verz. p. 227 (1827)	*margaritosa.*
Scotophila, Steph. Ill. Brit. Ent., Haust. iii. p. 18 (1829)	*porphyria.*
Actebia, Steph. Ill. Brit. Ent., Haust. iii. p. 20 (1829)	*præcox.*
Ilarus, Boisd. Ind. Meth. p. 76 (1829)	*porphyria.*
Neuria, Guen. Ann. Soc. Ent. Fr. x. p. 241 (1841), non descr.	*elegans.*
Phleboëis, Christ. Stett. ent. Zeit. 1887, p. 164	*petersi.*
Setagrotis, Smith, Bull. U.S. Nat. Mus. 38. p. 59 (1894)	*planifrons.*
Hypernania, Hmpsn. Moths Ind. ii. p. 194 (1894)	*denticulata.*
Praina, Schaus, J. N. Y. Ent. Soc. vi. p. 114 (1898)	*radiata.*

Proboscis fully developed; palpi upturned, the 2nd joint broadly scaled and with pointed tuft of hair at extremity, the 3rd joint somewhat porrect; frons smooth; eyes large, round; thorax clothed with hairs and scales and with divided ridge-like or spreading dorsal crest; tibiæ spined; abdomen cylindrical, dorsally clothed with rough hair at base. Fore wing narrow, elongate, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

Sect. I. (*Praina*). Antennæ of male bipectinate to apex with moderate branches.

*894. Lycophotia radiata. (Plate LXXIV. fig. 25.)

Praina radiata, Schaus, J. N. Y. Ent. Soc. vi. p. 114 (1898).
Lycophotia atristriata, Druce, A. M. N. H. (7) xi. p. 199 (1903).

Head and thorax deep black; base of shaft of antennæ and

a bar between them ochreous white; tegulæ at middle and patagia edged with ochreous white; abdomen ochreous white, irrorated with fuscous; pectus, legs, and ventral surface of abdomen ochreous, thickly irrorated with black. Fore wing ochreous white, slightly tinged with rufous and irrorated with black scales; a black fascia in and just below cell extending to termen from just below apex to vein 2, leaving fine pale streaks on the veins arising from the cell; a broader fascia from middle of cell to above middle of vein 5, and a slight fascia above vein 2 not reaching termen; vein 1 defined by a black fascia above it and streak below it; a black fascia on inner margin from before middle to tornus. Hind wing ochreous white, the costal area suffused with fuscous brown, the termen fuscous brown; the underside with the costal area broadly and the termen slightly irrorated with black.

Hab. Brazil, Castro Paraña (*D. Jones*), type † ♂ *radiata* in Coll. Schaus, type † ♀ *atristriata* in Coll. Druce. *Exp.* 40 millim.

Sect. II. Antennæ of male bipectinate with short fasciculate branches, the apical part serrate.

A. Fore wing with black streak below base of cell confluent with the claviform stigma.
  a. Fore wing with dentate black marks before subterminal line ..... *innominata.*
  b. Fore wing without dentate black marks before subterminal line ..... *molothina.*
B. Fore wing without black streak below base of cell.
  a. Fore wing with the cell dark brown before and between the stigmata ..... *perigrapha.*
  b. Fore wing with the cell concolorous.
    a^1. Head, thorax, and fore wing ochreous yellow ..... *lutescens.*
    b^1. Head, thorax, and fore wing bright sulphur-yellow ... *romanovi.*

895. Lycophotia innominata.

Agrotis innominata, Huds. N. Zealand Moths, p. 31, pl. 5. f. 39 (1898).

♂. Head and thorax grey mixed with reddish brown and black; palpi blackish at sides, tegulæ blackish at base; tarsi banded with black; abdomen grey suffused with fuscous, the ventral surface

Fig. 89.—*Lycophotia innominata*, ♂. ½.

white irrorated with black. Fore wing pale reddish brown thickly irrorated with black; the basal half of costa black; claviform elongate, defined by black and extending as a streak to base; the cell

blackish, defining the orbicular and reniform, which have rather obscure grey annuli, the former produced on outer side; the subterminal line represented by a series of greyish points with dentate black marks on their inner side between vein 6 and submedian fold; a terminal series of black points. Hind wing grey suffused and irrorated with fuscous brown; the cilia white; the underside paler, with terminal series of dark points.

Hab. N. Zealand (*Enys*), 1 ♂. *Exp.* 36 millim.

896. Lycophotia molothina.

Noctua molothina, Esp. Schmett. iii. pl. 85. f. 1 (1789); Staud. Cat. Lep. pal. p. 135.
Agrotis velum, Germ. Faune Ins. Eur. xxii. pl. 13 (1812); Herr.-Schäff. Schmett. Eur ii. pl. 6. f. 30.
Chersotis ericæ, Boisd. Ind. Meth. p. 104 (1840).
Agrotis occidentalis, Bell. Ann. Soc. Ent. Fr. 1860, p. 665, pl. 12. ff. 6, 7.

♂. Head and thorax black-brown slightly mixed with grey; antennæ with the basal joint white in front; tarsi ringed with white; abdomen grey irrorated with fuscous brown. Fore wing black-brown slightly irrorated with grey and sometimes tinged with rufous; a grey patch on basal costal area extending to just below cell; a black streak above base of vein 1 confluent with the elongate black-defined claviform stigma; the antemedial line grey, waved, oblique, angled outwards below costa and above inner margin; orbicular and reniform fuscous, with greyish annuli defined by black, the former somewhat irregular, elliptical, the latter sometimes angled inwards on median nervure, a black fascia before and between them in lower part of cell; the postmedial line indistinct, minutely dentate, black defined by grey on outer side, bent outwards below costa, excurved to vein 4, then incurved and oblique; subterminal line indistinct, grey, defined by a series of dentate blackish marks on inner side, angled outwards at vein 7 and somewhat dentate at veins 4, 3, and 1; some pale points on costa towards apex, a terminal series of dark points. Hind wing white, the veins, costal and terminal areas suffused with fuscous brown, the last narrowing to tornus; cilia white; the underside with the costal and terminal areas irrorated with fuscous.

♀. Hind wing almost wholly suffused with fuscous brown.

Ab. 1. *occidentalis*. Darker, blackish.

Hab. France, Saud & Frey Colls.; Belgium, Zeller Coll.; Germany; Austria; Hungary; Russia, Livonia, Zeller Coll. *Exp.* 40 millim.

*897. Lycophotia perigrapha. (Plate LXXIII. fig. 30.)

Agrotis perigrapha, Püng. Iris, xii. p. 290, pl. 8. f. 10 (1899); Staud. Cat. Lep. pal. p. 135.

Head and thorax grey, the scales tipped with dark brown, the thoracic crests blackish at tips; abdomen ochreous irrorated with dark brown. Fore wing lilacine grey thickly irrorated with brown;

subbasal line strong, black, from costa to submedian fold and angled outwards below costa; antemedial line brown, oblique, slightly sinuous and strongly angled outwards above inner margin; orbicular very large, V-shaped or semi-elliptical, open above, defined by black below; reniform large, incompletely defined by black, the cell before and between the stigmata blackish; postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line with two prominent dentate black marks below costa, then indistinct, formed of pale and brown scales, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; a fine pale line at base of cilia. Hind wing pale, almost entirely suffused and irrorated with brown; cilia whitish; the underside whitish irrorated with brown, a black discoidal lunule and sinuous postmedial line.

Hab. Tibet, Kuku-noor, type † in Coll. Püngeler, Amdo. *Exp.* 40 millim.

898. **Lycophotia lutescens.** (Plate LXXIII. fig. 31.)

Agrotis lutescens, Ev. Bull. Mosc. iii. p. 591, pl. 14. f. 3 *a*, *b* (1844); Staud. Cat. Lep. pal. p. 145.
Agrotis dilucida, Ev. Faun. Volg. Ur. p. 205 (1844).
Agrotis leonina, Staud. Stett. ent. Zeit. 1877, p. 182.

Ochreous; thorax tinged with rufous; abdomen white at base. Fore wing irrorated with rufous; the subbasal and antemedial lines represented by obscure dark spots below the cell; orbicular and reniform small dark spots; postmedial line minutely dentate, angled outwards below costa and at vein 4, then incurved; subterminal line dark, angled outwards at vein 7, excurved at middle and angled inwards at discal fold; a more or less prominent terminal series of dark points. Hind wing white, suffused with ochreous brown on terminal half.

Hab. Russia, Urals, 1 ♂, 1 ♀, Sarepta. *Exp.* 44 millim.

*899. **Lycophotia romanovi.**

Agrotis romanovi, Christ. Rom. Mém. ii. p. 37, pl. 2. f. 7 (1885); Staud. Cat. Lep. pal. p. 148.

♀. Head and thorax bright sulphur-yellow; abdomen ochreous, white at base. Fore wing bright sulphur-yellow; a diffused rufous antemedial line, angled inwards on vein 1 and outwards above inner margin; orbicular represented by a small reddish-brown spot, the reniform by a small lunule; postmedial line rufous, oblique, slightly angled outwards below costa and at vein 4; subterminal line represented by a diffused series of dentate reddish-brown marks, slightly angled outwards at vein 7 and excurved at middle; a terminal series of red-brown points; cilia rufous at tips. Hind wing ochreous yellow, the costal area whitish; the cilia pale yellow; the underside yellowish white, with the terminal area tinged with rufous.

Ab. 1. Fore wing with the postmedial line nearer the reniform, more diffused and almost straight.

Hab. Armenia, Jura, in Coll. Püngeler. *Exp.* 44 millim.

Sect. III. Antennæ of male strongly serrate and fasciculate.

A. Fore wing with the ground-colour white ..... *achromatica.*
B. Fore wing with the ground-colour green ..... *cofrensis.*
C. Fore wing with the ground-colour grey-brown ..... *sichima.*

900. **Lycophotia achromatica**, n. sp. (Plate LXXIII. fig. 32.)

♂. Head and thorax white, the head and tegulæ tinged with rufous, the thorax irrorated with some large brown scales; tarsi banded with black; abdomen white, tinged with ochreous towards extremity. Fore wing white, sparsely irrorated with reddish brown; traces of a waved brown subbasal line from costa to submedian fold; a rather indistinct antemedial line bent outwards to costa, strongly angled inwards on vein 1 and outwards above inner margin; orbicular represented by a black point with two slight streaks from it to the small blackish reniform; postmedial line obsolescent, dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the veins towards termen with slight dark streaks; faint traces of a dentate subterminal line, with dark marks before it at costa and beyond it above veins 4 and 5; a terminal series of black points; cilia slightly tinged with rufous. Hind wing semihyaline white.

Hab. Brazil, Bahia (*Lacerda, O. Thomas*), 3 ♂ type. *Exp.* 36 millim.

*901. **Lycophotia cofrensis.**

Carneades cofrensis, Schaus, J. N. Y. Ent. Soc. vi. p. 109 (1898).

♂. Head whitish mixed with black, sides of palpi black; antennæ brown; tegulæ pale greenish, the terminal half black followed by brown tipped with white; thorax reddish brown, the

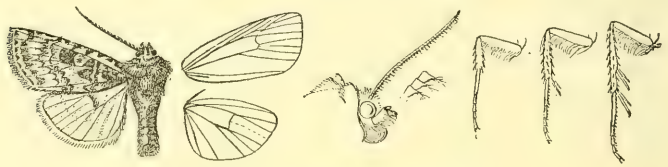


Fig. 90.—*Lycophotia cofrensis*, ♂. ½.

scales tipped with white and mixed with black, some yellowish and rufous on shoulders; legs and abdomen brown and white, the tarsi ringed with white. Fore wing pale sap-green; a waved black subbasal line from costa to vein 1, followed by white marks, then black ones; a double antemedial line filled in with green and angled outwards below costa and above inner margin; claviform large, black; orbicular and reniform green, with white annuli defined by black, the former large, somewhat oblique and open above, the latter somewhat constricted at middle and with some black in its lower extremity, the cell before and between them black; an oblique medial shade from lower angle of cell to inner margin; the post-

medial line strongly dentate, bent outwards below costa, excurved to vein 4, then oblique; costa towards apex black, with some white points on it; subterminal line obscurely dentate, diffused, black, angled outwards at vein 7; a terminal series of black points; cilia fuscous and white. Hind wing white irrorated with brown; the inner margin brownish; a fine terminal line; the underside with discoidal bar and curved postmedial line.

Hab. Mexico, Coffre de Perote, Las Vegas, type † ♂ in Coll. Schaus. *Exp.* 38 millim.

902. Lycophotia sichima. (Plate LXXIV. fig. 1.)

Mamestra sikkima, Moore, P. Z. S. 1867, p. 53; Hmpsn. Moths Ind. ii. p. 183.

Head and thorax black and dark-brown, some of the scales tipped with white, the tegulæ often wholly white except the tips, which are rufous as also the dorsal crests; tibiæ and tarsi ringed with white; abdomen dark brown. Fore wing grey-brown irrorated with black and a few large yellowish-white scales; double waved black subbasal and antemedial lines filled in with grey, the former ending at submedian fold where there is a black patch beyond it, the latter angled outwards below costa and more strongly above inner margin; claviform defined by black, and with more or less diffused yellowish-white scales on it; orbicular and reniform more or less completely suffused with yellowish-white scales and defined by black, the former somewhat quadrate; a waved medial line excurved at median nervure; the postmedial line double, dentate, filled in with grey, bent outwards below costa, slightly angled inwards in discal fold, incurved below vein 4; the subterminal line greyish, minutely waved, angled outwards at vein 7 and excurved at middle, defined by a blackish patch before it at costa and some dentate marks at middle; a greyish apical patch; a waved black terminal line and fine pale line at base of cilia. Hind wing fuscous, the cilia greyish with a brown line through them; the underside whitish, the costal and terminal areas broadly brown irrorated with white, a slight discoidal spot.

Hab. Tibet, Yatong (*Bingham*, *Hobson*), 2 ♂, 4 ♀; Sikhim (*Atkinson*, *Lidderdale*, *Pilcher*), 6 ♂, 3 ♀, type. *Exp.* 28–36 millim.

Sect. IV. (*Lycophotia*). Antennæ of male minutely serrate and fasciculate.

A. Fore wing with black streak below base of cell.
  a. Fore wing with the reniform angled inwards on median nervure.
    a^1. Fore wing with the claviform white and extending to base ..... *junctimacula*.
    b^1. Fore wing with the claviform minute, slightly defined by black ..... *erschoffi*.
  b. Fore wing with the reniform not angled inwards on median nervure.
    a^1. Fore wing whitish, the orbicular elongate ..... *militaris*.

b^1. Fore wing blue-grey.
a^2. Fore wing with the orbicular narrow and elongate. *planifrons.*
b^2. Fore wing with the orbicular large, open above ... *fidelis.*
c^1. Fore wing grey, the orbicular absent, a dark streak in lower extremity of cell ... *rodea.*
d^1. Fore wing grey-brown, the cell suffused with brown before and between the stigmata.
a^2. Fore wing with the orbicular minute, linear ... *radiola.*
b^2. Fore wing with the orbicular rounded.
a^3. Tegulæ dark at tips ... *ononensis.*
b^3. Tegulæ with dark medial line only ... *mendosica.*
e^1. Fore wing bright rufous ... *porphyrea.*

B. Fore wing without black streak below base of cell.
a. Tegulæ black at base ... *ornea.*
b. Tegulæ not black at base.
a^1. Fore wing pale yellow ... *flavina.*
b^1. Fore wing pale ochreous ... *ochrina.*
c^1. Fore wing bright rufous ... *cermesina.*
d^1. Fore wing white to pale rufous or ochreous.
a^2. Fore wing with the orbicular and reniform absent. *petersi.*
b^2. Fore wing with the orbicular and reniform present.
a^3. Fore wing without dark spot on lower edge of reniform.
a^4. Fore wing slightly irrorated with fuscous ... *ripæ.*
b^4. Fore wing very thickly irrorated with fuscous ... *farinosa.*
b^3. Fore wing with dark spot on lower edge of reniform ... *scandens.*
e^1. Fore wing dirty whitish grey.
a^2. Fore wing with the orbicular elongate.
a^3. Fore wing with the orbicular connected with the reniform by a spur ... *congrua.*
b^3. Fore wing with the orbicular not connected with the reniform ... *quebecensis.*
b^2. Fore wing with the orbicular round ... *elata.*
f^1. Fore wing leaden-grey tinged with purplish red ... *cuprina.*
g^1. Fore wing black-brown.
a^2. Fore wing with the markings not formed by pale irroration ... *astricta.*
b^2. Fore wing with the markings formed by diffused whitish and ochreous irroration ... *nigra.*

903. Lycophotia junctimacula.

Agrotis junctimacula, Christ. Rom. Mém. iii. p. 67, pl. 3. f. 11 (1887); Staud. Cat. Lep. pal. p. 147.

Head white mixed with dark brown; palpi brown, white at tips; tegulæ white, with brown medial line and tips; thorax brown, the patagia edged with white above; abdomen whitish irrorated with brown. Fore wing with the apex rather produced and acute; grey more or less strongly suffused with reddish brown and irrorated with dark brown; the subbasal line represented by a blackish spot below costa; claviform an elongate white streak extending to base and edged with black; orbicular and reniform with fuscous centres and white annuli defined by blackish, the former elliptical, very oblique, the latter with its lower extremity bent inwards on median nervure so as to nearly or quite join the orbicular; the

postmedial line minutely dentate and produced to points on the veins, bent outwards below costa, obliquely curved to vein 4, then extremely oblique ; the subterminal line white, defined by a series of dentate blackish marks on its inner side, slightly angled outwards at vein 7 and excurved at middle ; a dark terminal line ; cilia whitish, with a brown line through them. Hind wing whitish, more or less strongly suffused with brown ; the cilia whitish ; the underside whitish, the costal and terminal areas irrorated with brown, a slight discoidal spot and curved postmedial line.

Hab. PERSIA ; W. TURKESTAN, Samarkand, 2 ♂, Ferghana ; TIBET, Kuku-noor, 1 ♀. *Exp.* 36–38 millim.

904. Lycophotia erschoffi. (Plate LXXIV. fig. 2.)

Agrotis ledereri, Staud. Stett. ent. Zeit. 1888, p. 2, nec Ersch.
Agrotis erschoffi, Staud. Iris, ix. p. 248 (1896) ; id. Cat. Lep. pal. p. 142.

Head and thorax dark brown mixed with grey ; tegulæ blackish at tips ; abdomen grey-brown. Fore wing grey-brown tinged with rufous and irrorated with fuscous ; a slight black streak below base of cell ; subbasal line double, black filled in with grey, curved from costa to submedian fold ; antemedial line waved, defined by grey on inner side ; claviform small, indistinctly defined by black ; orbicular and reniform greyish defined by black, the former oblique, open above, the latter slightly angled inwards on median nervure ; the postmedial line dentate and produced to points on the veins, defined by greyish on outer side, strongly bent outwards below costa, oblique to vein 4, then incurved ; the subterminal line indistinct, greyish, minutely waved, angled outwards at vein 7 and excurved at middle ; a terminal series of slight blackish lunules. Hind wing brown ; cilia greyish, with brown line through them ; the underside grey irrorated with brown, a dark discoidal lunule and curved postmedial line.

Hab. W. TURKESTAN, Samarcand, Turcomania, 1 ♂, 1 ♀, Ferghana. *Exp.* 40–42 millim.

905. Lycophotia militaris.

Agrotis militaris, Staud. Stett. ent. Zeit. 1888, p. 247 ; id. Rom. Mém. vi. pl. 6. f. 5 ; id. Cat. Lep. pal. p. 143.

♂. Head and thorax white mixed with pale brown ; palpi black at sides except at tips ; sides of frons and a bar above it black ; tegulæ with black medial line, the patagia edged with black ; tarsi banded with black ; abdomen grey, dorsally tinged with fuscous, ventrally irrorated with brown, the anal tuft ochreous. Fore wing white and fuscous grey, and with slight ochreous streaks in and below cell ; a dentate subbasal line from costa to submedian fold ; a minutely dentate antemedial line angled inwards on vein 1 and outwards above inner margin ; claviform defined by black, narrow, very elongate and extending almost to base ; orbicular and reni-

form whitish defined by black, the former minute, elliptical, only separated from the latter by the medial shade which is excurved at middle; the postmedial line indistinct, dentate, and with black points at the veins, excurved from costa to vein 4, then oblique; the subterminal line obscurely defined by the area beyond it being suffused with fuscous, angled outwards at vein 7, dentate at veins 3, 4, and traversed by short black streaks between veins 2–6 and above 7; a terminal series of black points. Hind wing white; the costal and terminal areas down to vein 2 irrorated with fuscous; the veins tinged with fuscous towards termen; some slight postmedial black streaks on the veins and small terminal black lunules from apex to vein 2.

Hab. Amurland, Ussuri, 2 ♂. *Exp.* 42 millim.

*906. Lycophotia planifrons. (Plate LXXIV. fig. 3.)

Agrotis planifrons, Smith, Trans. Am. Ent. Soc. xvii. p. 42 (1890); id. Cat. Noct. N. Am. p. 65.

Bluish ash-grey; palpi blackish at sides; tegulæ tipped with black. Fore wing with the inner area tinged with vinous red, especially on medial area; a black streak below base of cell; the subbasal line single, black, strongly dentate; the antemedial line single, broader at costa and inner margin, somewhat oblique and strongly dentate in the interspaces; claviform obsolete; orbicular defined by black, elongate, the ends drawn out to the antemedial line, and the reniform, which is narrow, lunulate and darkened by the broad diffused medial shade; postmedial line broad, distinct, crenulate, bent outwards below costa, excurved to vein 4, then incurved; the postmedial area darker towards the subterminal line, which is only defined by this dark shade; a terminal series of black lunules. Hind wing white, the veins and termen slightly tinged with fuscous; the underside pale with dark irroration, a distinct discoidal spot and postmedial line on costal area only.

Hab. Canada, N.W. Br. Columbia. *Exp.* 34 millim. This species is unknown to me; figured from a drawing from type in Brooklyn Inst. Arts & Sci.

*907. Lycophotia fidelis. (Plate LXXIV. fig. 4.)

Lycophotia fidelis, de Joan. Bull. Soc. Ent. Fr. 1903, p. 29.

♂. Head and thorax grey mixed largely with dark brown and black; palpi blackish at sides; head with black bar between antennæ; tegulæ with black line; patagia edged with black; abdomen grey irrorated with brown. Fore wing bluish grey, the veins streaked with black and irrorated with white scales, the discal and submedian folds with slight rufous streaks; a black streak below base of cell; the subbasal line represented by an oblique striga from costa, the antemedial by a striga from costa and slight angle above inner margin; claviform elongate, incompletely

defined by black; orbicular and reniform grey defined by black, the former somewhat V-shaped, open above, and with an oblique black streak from its inner side; the postmedial line indistinct, dentate, excurved from costa to vein 4 but interrupted at discal fold, incurved below vein 4; the subterminal line irregularly dentate, defined by the area beyond it being rather darker, bent outwards to termen below apex, dentate on veins 4 and 3, and crossed by a series of black streaks of various lengths extending to the terminal series of points; cilia chequered fuscous and grey. Hind wing white, the veins tinged with brown; the termen suffused with brown rather broadly at costa, narrowing to a point towards tornus; the underside with the costal area irrorated with fuscous.

Hab. Portugal, Soalheira, 1 ♂ type in Coll. Joannis. *Exp.* 40 millim.

*908. **Lycophotia rodea.** (Plate LXXVII. fig. 31.)

Leucania rodea, Schaus, Trans. Am. Ent. Soc. xxi. p. 232 (1898); Druce, Biol. Centr.-Am., Het. ii. p. 473.

♀. Head and thorax grey-white slightly mixed with brown; palpi fuscous at sides except at tips; abdomen ochreous. Fore wing grey-white irrorated with black, the veins slightly defined by brown and the terminal area tinged with brown; a black fascia below the cell from near base to origin of vein 2, pointed at extremities; a black fascia in lower part of cell from middle to extremity, pointed towards base; a small blackish lunule on outer edge of discocellulars; a diffused dark brown streak beyond lower angle of cell bent upwards to apex; a slight streak in extremity of submedian fold. Hind wing semihyaline white; the underside with the costal area ochreous white irrorated with brown.

Hab. Mexico, Jalapa, type †♀ in Coll. Schaus. *Exp.* 32 millim.

909. **Lycophotia radiola**, n. n. (Plate LXXIV. fig. 5.)

Setagrotis radiatus, Smith, Pr. U.S. Nat. Mus. xxii. p. 418 (1900), nec Schaus, 1898.

♀. Head and thorax grey-brown mixed with black; palpi blackish at sides except at tips; tegulæ with black medial and terminal lines with whitish between them; abdomen brownish grey, dorsally irrorated with fuscous. Fore wing grey-brown irrorated with black; the veins with black and grey streaks; a black streak in submedian fold below basal half of cell; orbicular and reniform very small, with whitish centres edged with black, the former elliptical; the subterminal line represented by slight black spots in the interspaces; a terminal series of black points. Hind wing white, the termen slightly tinged with brown; the underside with the costal area slightly irrorated with brown.

Hab. U.S.A., California, 2 ♀, New Mexico, Embudo (*Cockerell*), 1 ♀. *Exp.* 34 millim.

910. Lycophotia ononensis.

Agrotis ononensis, Brem. Lep. Ost-Sib. p. 50, pl. 4. f. 9 (1864); Staud. Cat. Lep. pal. p. 151.
Agrotis scaramangæ, Alph. Hor. Soc. Ent. Ross. xvii. p. 47, pl. 2. f. 44 (1882).

Head, tegulæ, and front of thorax red-brown mixed with grey; thorax pale red-brown or greyish; legs dark brown; abdomen ochreous brownish, dark brown below. Fore wing grey with a pinkish tinge, irrorated with brown, and the interspaces obscurely streaked with brown, the veins with fine dark streaks outlined with grey; a black streak in submedian fold to near middle; orbicular and reniform small, grey defined by black, the former oblique, the cell before and between them black, the reniform with short blackish streaks beyond it; the subterminal line represented by a series of dentate black marks angled outwards at vein 7 and excurved at middle, the area beyond it rather darker intersected by the grey streaks defining veins 3, 4, 6, 7; a terminal series of black points; cilia ochreous with a dark line through them. Hind wing ochreous suffused with fuscous; the cilia ochreous; the underside pale irrorated with brown.

Hab. E. Turkestan, Ili, Korla; Mongolia, Uliassutai Mts., 1 ♂, 1 ♀, Urga; Tibet, Amdo; E. Siberia, Kamschatka, Amurland. *Exp.* 40 millim.

911. Lycophotia mendosica, n. sp. (Plate LXXIV. fig. 6.)

♂. Head and thorax grey, mixed with pale brown and fuscous; tegulæ with black medial band; abdomen grey-brown. Fore wing brownish grey, irrorated with black and reddish brown; a short oblique dark subbasal fascia from cell to vein 1, followed by a fine streak in submedian fold diffused to vein 1 on medial area; orbicular and reniform grey defined by black, the former small, round, the cell before and between them black-brown; some brown suffusion beyond and below end of cell; the veins slightly streaked with brown; a brown mark on costa before apex and a terminal series of small dentate blackish marks. Hind wing grey suffused with fuscous brown; cilia white; the underside whitish irrorated with brown, a dark discoidal spot.

Hab. Argentina, Andes, Aconcagua (*Fitzgerald*), 1 ♂ type. *Exp.* 30 millim.

912. Lycophotia porphyrea.

Noctua porphyrea, Schiff. Wien. Verz. p. 83 (1776); Hübn. Samml. Eur. Schmett., Noct. ff. 93, 473; Dup. Lép. Fr. vi. p. 440, pl. 100. f. 4; Steph. Ill. Brit. Ent., Haust. iii. p. 19.
Noctua concinna, Esp. Schmett. iv. pl. 152. f. 1 (1786).
Noctua strigula, Thunb. Mus. Nat. (Dom. iv.) p. 72 (1788); Staud. Cat. Lep. pal. p. 135.
Noctua picta, Fabr. Ent. Syst. iii. 2, p. 91 (1793).
Noctua ericæ, Haw. Lep. Brit. p. 224 (1809).
Agrotis marmorea, Grasl. Ann. Soc. Ent. Fr. 1863, p. 312, pl. 8. f. 9.
Agrotis suffusa, Tutt. Brit. Noct. ii. p. 90 (1891).

Head and thorax bright rufous mixed with white; tegulæ with

blackish medial line; tarsi fuscous with pale rings; abdomen ochreous brown, the anal tuft and ventral surface rufous. Fore wing bright rufous; the veins streaked with white to the postmedial line; a subbasal white line angled outwards on median nervure and ending at submedian fold, in which there is a black streak from its extremity; a white antemedial line slightly defined by black on outer side, angled inwards in cell to the subbasal line, outwards in submedian fold and inwards on vein 1; claviform elongate, narrow, defined by black and a few white scales; orbicular and reniform with white annuli defined by black, the former small, round; the postmedial line black, defined by white on outer side, dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line formed by a series of partially connected short white streaks on the veins, angled outwards at vein 7 and excurved at middle; a terminal dark line with a series of white points on the veins. Hind wing ochreous tinged with fuscous brown; the cilia reddish towards apex; the underside pale, the costal area suffused with rufous, a dark discoidal point and indistinct curved postmedial line.

Ab. 1. *marmorea*. Paler.

Ab. 2. *suffusa*. Much darker.—Shetland Is.

Hab. Britain, Shetland Is., Leech Coll., England, Leech Coll.; France, Sand Coll., Pyrenees; Jutland; Germany, Zeller & Frey Colls.; N. Italy; Russia, Livonia, Zeller Coll. *Exp.* 24–34 millim.

Larva. Meyrick, Brit. Lep. p. 95; Barrett, Lep. Brit. iii. p. 364, pl. 134. f. 1.

Ochreous or pinkish brown, sometimes with darker irroration; dorsal line interrupted, white edged with fuscous marks; subdorsal line similar, less prominent; spiracular line pinkish white, dark-edged above; head pale yellow-brown with dark markings. Food-plants: *Calluna*, *Erica*. 9–5.

913. Lycophotia ornea.

Agrotis ornea, Druce, Biol. Centr.-Am., Het. i. p 285, pl. 27. f. 11 (1889), ♀.
Agrotis altes, Druce, Biol. Centr.-Am., Het. i. p. 285, pl. 27. f. 12 (1889), ♂.

♂. Head and thorax pale brownish ochreous; palpi blackish except at base; tegulæ with basal black patch; legs tinged with fuscous above; abdomen ochreous white, dorsally tinged with fuscous. Fore wing ochreous, sparsely irrorated with black; a small subbasal black spot on costa, another antemedial and a diffused patch on vein 1; traces of a brown-edged reniform stigma; reniform black, comma-shaped; traces of a postmedial line arising from a small black spot on costa, bent outwards below costa, excurved to vein 4, then incurved; traces of a pale subterminal line angled outwards at vein 7 and excurved at middle, slightly defined on inner side by fuscous, and with more or less fuscous suffusion beyond it; the terminal points obscurely defined by a pale waved line. Hind wing semihyaline white, the veins and terminal area

tinged with fuscous; the underside white, the costal area irrorated with brown.

♀. Browner; hind wing fuscous, the cilia white with dark line at base.

Hab. Mexico, Teapa (*H. H. Smith*), 1 ♂ type *altes*, Mexico City (*Hoege*), 2 ♀ type, Godman-Salvin Coll. *Exp.* 36 millim.

914. Lycophotia flavina.

Agrotis flavina, Herr.-Schäff. Eur. Schmett., Noct. vi. p. 59, f. 593 (1856); Staud. Cat. Lep. pal. p. 148.

♂. Head and thorax pale yellow, the vertex of head and tips of tegulæ and patagia with a few black scales; abdomen white tinged with ochreous. Fore wing pale yellow, irrorated with a few black scales; traces of an antemedial line with a few black scales on it, angled outwards in submedian fold and inwards on vein 1; faint traces of orbicular and reniform stigmata; the postmedial line indistinct, slightly bent outwards below costa, excurved to vein 4, then incurved; faint traces of a subterminal line angled outwards at vein 7 and excurved at middle. Hind wing white, the terminal area tinged with ochreous.

Hab. E. Rumelia; Armenia; Asia Minor; Syria, Mardin, 1 ♂; Persia, Mesopotamia; Kurdistan. *Exp.* 36 millim.

915. Lycophotia ochrina. (Plate LXXIV. fig. 7.)

Agrotis ochrina, Staud. Iris, x. p. 274, pl. 9. f. 13 (1897); id. Cat. Lep. pal. p. 148.

♂. Head and thorax white and pale yellow; palpi, pectus, and legs white; abdomen ochreous white. Fore wing uniform pale yellow. Hind wing pale ochreous, the cilia white. Underside of fore wing pale ochreous with the costal area white; hind wing white.

Another specimen is more ochreous in tone, the lines of fore wing all traceable, the claviform, orbicular and reniform imperfectly defined with brown.

Hab. Syria, 2 ♂, Leech Coll. *Exp.* 38 millim.

*916. Lycophotia cermesina.

Noctua kermesina, Mab. Ann. Soc. Ent. Fr. 1869, p. 55, pl. 2. f. 10; Staud. Cat. Lep. pal. p. 140.

♂. Head and thorax bright rufous; palpi fuscous, white at tips; abdomen ochreous white tinged with fuscous. Fore wing bright rufous; the subbasal, antemedial, and postmedial lines with small prominent black spots on costa, the first otherwise obsolete, the second very indistinct, oblique, waved; the last reduced to a series of slight points, bent outwards below costa, slightly incurved at discal fold and incurved below vein 4; a slight medial shade;

claviform and orbicular obsolete ; reniform represented by a fuscous spot at lower angle of cell ; subterminal line indistinct, blackish, somewhat punctiform, angled outwards at vein 7 and excurved at middle ; a terminal series of slight points. Hind wing white, the veins and terminal area tinged with brownish ochreous ; the underside with the costal area irrorated with pale brown, traces of a discoidal point and curved postmedial line, a fine terminal line.

Hab. Spain, Andalusia ; Corsica, type † ♂ in Coll. Mabille. *Exp.* 36 millim.

*917. Lycophotia petersi.

Phleboëis petersi, Christ. Stett. ent. Zeit. 1887, p. 164 ; id. Rom. Mém. v. p. 28, pl. 2. f. 3 ; Staud. Cat. Lep. pal. p. 154.

Head and thorax ochreous yellow, more or less strongly mixed with dark brown scales ; pectus, legs, and abdomen ochreous white. Fore wing ochreous yellow, irrorated with dark brown scales ; the veins streaked with white ; an obscure dark brown antemedial line strongly angled inwards on median nervure and vein 1 ; an obscure discoidal lunule ; postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved ; a dentate subterminal line slightly angled outwards at vein 7 and 4 ; a fine dark terminal line ; cilia whitish. Hind wing white, very slightly tinged with ochreous on terminal area.

Hab. W. Turkestan, Tekké, Askabad in Coll. Elwes. *Exp.*, ♂ 36, ♀ 32 millim.

918. Lycophotia ripæ.

Noctua ripæ, Hübn Samml. Eur. Schmett., Noct. ff. 702–3 (1827) ; Boisd. Icon. Lep. Eur. pl. 75. f. 6 ; Snell. Tijds. v. Ent. viii. p. 70, pl. 2. f. 5 ; Staud. Cat. Lep. pal. p. 148.
Noctua wissenbornii, Frr. Beitr. v. p. 139, pl. 466. f. 3 (1828).
Agrotis nebulosa, Steph. Ill. Brit. Ent., Haust. ii. p. 127, pl. 22. f. 1 (1829).
Agrotis desilii, Pierr. Ann. Soc. Ent. Fr. viii. p. 95, pl. 8. f. 2 (1839).
Agrotis desertorum, Boisd. Ind. Meth. p. 111 (1840).
Agrotis deserticola, Ev. Bull. Mosc. iii. p. 544, pl. 5. f. 2 (1842) ; Herr.-Schäff. Schmett. Eur. ii. Noct. f. 492.
Agrotis instructa, Wlk. x. 352 (1856).
Agrotis obotritica, Schmidt, Stett. e. Zeit. 1858, p. 377.
Agrotis alexandrensis, Baker, Trans. Ent. Soc. 1894, p. 37, pl. 1. f. 5.

Head and thorax red-brown slightly mixed with white and a few black scales ; the lower part of frons white ; tarsi banded with black ; abdomen ochreous white. Fore wing pale red-brown, irrorated sparsely with black ; the veins streaked with white ; blackish streaks on base of costa and below cell ; a waved whitish subbasal line from costa to submedian fold ; a double, waved, antemedial line angled outwards below costa and strongly above inner margin ; claviform small, defined by black ; orbicular and reniform small, with blackish centres and whitish annuli defined by black ; the postmedial line dentate and produced to white points on the veins, bent outwards below costa, excurved to vein 4, then

incurved; subterminal line pale, slightly angled outwards at vein 7 and excurved at middle, defined by dentate fuscous marks in the interspaces before it and fuscous streaks on the veins beyond it; a terminal series of black points. Hind wing white; the terminal area tinged with fuscous in female. Underside white, with slight discoidal spot and curved postmedial line on both wings.

Ab. 1. *desertorum*. Head, thorax, and fore wing grey-white, with the markings fuscous brown.—E. Europe; Egypt; ? C. and N. Asia.

Ab. 2. *vissenborni*. Head, thorax, and fore wing white slightly tinged with red-brown.—Germany; Denmark; Sweden.

Ab. 3. *desili*. Head, thorax, and fore wing pure white, the stigmata with dark outlines and a few points representing the lines.

Hab. Britain, 2 ♂, 3 ♀, type *instructa*; France, Leech Coll.; Germany, Zeller & Frey Colls.; Denmark; Sweden; S. Russia; Syria; Egypt, type † *alexandrensis* in Coll. Baker; Mongolia, Uliassutai; Siberia, 2 ♂. *Exp.* 32–44 millim.

Larva. Meyr. Brit. Lep. p. 94; Barrett, Lep. Brit. iii. p. 321, pl. 128. f. 2.

Pale green, yellow-grey, or pinkish white; dorsal line dark, double; the subdorsal, triple lateral, and spiracular lines indistinctly darker; head and thoracic plate pale yellow-brown. Food-plants: *Cynoglossum* and *Salsola*. 8–4.

*919. Lycophotia farinosa. (Plate LXXVIII. fig. 2.)

Agrotis farinosa, Staud. Stett. ent. Zeit. 1888, p. 12; id. Cat. Lep. pal. p. 148.

♂. Head and thorax grey-white thickly irrorated with fuscous brown; palpi with the 2nd joint fuscous at sides; tarsi with blackish band; abdomen ochreous white slightly irrorated with fuscous. Fore wing white with a slight brown tinge and very thickly irrorated with fuscous; subbasal line represented by a dark striga from costa; traces of a waved antemedial line; claviform small, only defined by some black scales; orbicular and reniform small, the former rounded, defined by some black scales or almost obsolete, the latter fuscous with indistinct black outline; postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then oblique; subterminal line represented by very slight brown suffusion on its inner side; a terminal series of dark points. Hind wing nearly pure white; the underside with slight fuscous irroration on costal area.

♀. Hind wing uniformly suffused with pale fuscous brown, the cilia pure white; the underside with the costal and terminal areas irrorated with fuscous, a small discoidal spot and sinuous postmedial line.

Hab. E. Turkestan, Ili, in Coll. Püngeler. *Exp.*, ♂ 40, ♀ 44 millim.

920. Lycophotia scandens.

Agrotis scandens, Riley, 1st Rep. Ins. Mo. p. 76, pl. i. ff. 5, 7 (1869); Harv. Bull. Buff. Soc. Nat. Sci. iii. p. 73, pl. 3. f. 4; Saund. Fruit Insects, p. 107, f. 105; Slingerland, Bull. Cornell Exp. Stat. xciii. pp. 567, 569, pl. 1; Smith, Cat. Noct. N. Am. p. 93.

♂. Pale grey, often more or less suffused with pink or yellow; palpi and legs irrorated with brown; abdomen ochreous white. Fore wing with slight blackish irroration; two subbasal black specks on costa and traces of a double waved subbasal line; two antemedial specks on costa and an indistinct double, waved, antemedial line; the claviform represented by a few dark scales; the orbicular and reniform indistinct, outlined by some orange or pink and black scales, the former round, the latter with dark spot on its lower edge; two dark postmedial points on costa, the postmedial

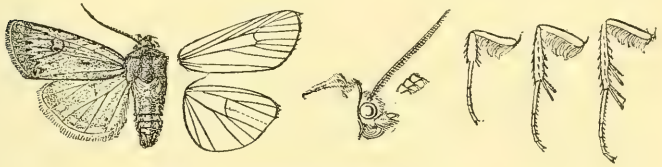


Fig. 91.—*Lycophotia scandens*, ♂. ½.

line represented by a series of points bent outwards below costa, then obliquely curved; two white points on costa before the subterminal line, which consists of a series of small white lunules with some orange or pink and black scales on their edges; cilia pale rufous. Hind wing white, with the veins and terminal area tinged with brown; the underside with small discoidal lunule and postmedial series of points.

Hab. U.S.A., N. & E. States, 2 ♂, Grote & Zeller Colls., Illinois, Chicago, 1 ♂; Colorado. *Exp.* 40 millim.

Larva. Riley, Rep. Ins. Mo. i. p. 78 (1869).

Head pale brown with brown bands. Body pale, mottled in darker, somewhat greenish from the food. Dorsal, subdorsal, lateral, and stigmatal lines obscure, irregularly clouded, the dorsal line sometimes narrowly white. Cervical shield brown, with a black spot on each side. Tubercles blackish dorsally. A general feeder.—H. G. D.

*921. Lycophotia congrua. (Plate LXXIV. fig. 8.)

Agrotis congrua, Smith, Trans. Am. Ent. Soc. xvii. p. 43 (1890); id. Cat. Noct. N. Am. p. 65.

♂. Ashen grey; palpi dark at sides; tegulæ with a narrow dark medial line edged with white scales above, reddish at tips. Fore wing with somewhat ferruginous shade from base through the cell and postmedial area; the veins with slight dark streaks; the subbasal line marked on costa only; the antemedial line single with a

distinct costal spot, then traceable and dentate below costa and in cell, obsolete to vein 1, then excurved; claviform obsolete; orbicular defined by black, elongate and connected with reniform by a short spur; the reniform incomplete, ill-defined; postmedial line single, indistinct, produced to slight points on the veins, bent outwards below costa, excurved to vein 4, then incurved; subterminal line pale, ill-defined, interrupted; the terminal area tinged with rufous; a terminal series of dusky lunules. Hind wing glistening whitish; the veins tinged with fuscous; an indistinct discoidal lunule; the underside whitish with dark irroration, a postmedial line on costal area only.

Hab. U.S.A., Oregon. *Exp.* 33 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*922. **Lycophotia quebecensis.** (Plate LXXIV. fig. 9.)

Setagrotis quebecensis, Smith, Pr. U.S. Nat. Mus. xxii. p. 417 (1900).

♀. Head, thorax, and abdomen pale dirty fuscous grey. Fore wing pale dirty fuscous grey with darker irroration, the markings very indistinct; subbasal line only indicated below costa and median nervure; antemedial line nearly erect, single, slightly excurved in interspaces; orbicular elliptical longitudinally, rather paler than ground-colour; reniform large, with fuscous centre defined by a slight grey annulus; faint traces of a medial shade; postmedial line single, crenulate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by white irroration diffused outwardly. Hind wing pale fuscous, with a slight ochreous tinge at base; cilia white; the underside grey with darker irroration, a prominent discoidal spot and postmedial line.

Hab. Canada, Quebec. *Exp.* 33 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

*923. **Lycophotia elata.** (Plate LXXIV. fig. 10.)

Setagrotis elata, Smith, J. N. York Ent. Soc. vi. p. 106 (1898).

Yellowish to bluish ash-grey. Fore wing with the markings indistinct and faintly traceable; the subbasal line represented by double striæ on costa; the ante- and postmedial lines with double striæ on costa, then hardly traceable, the former slightly excurved in interspaces, the latter even, bent outwards below costa, excurved to vein 4, then incurved; claviform represented by a few black scales; orbicular moderate, round, with slight yellowish annulus incompletely defined by a few black scales; reniform with slight yellowish annulus incompletely defined by black scales, its lower part filled in with fuscous; subterminal line whitish, irregular, interrupted, defined on inner side by a blackish shade, the area beyond it somewhat darker. Hind wing white, with slight dark discoidal lunule the termen tinged with fuscous, in female more

suffused with fuscous; the underside whitish with dark irroration, discoidal spot and postmedial line.

Hab. U.S.A., Colorado (*Gillette*). *Exp.* 36–40 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

924. **Lycophotia cuprina.** (Plate LXXIV. fig. 11.)

Agrotis cuprina, Staud. Iris, xii. p. 365, pl. 6. f. 11 (1899); id. Cat. Lep. pal. p. 144.

Head and thorax dark brown, mixed with white and more or less strongly tinged with red; tarsi banded with black; abdomen grey-white, the anal tuft ochreous. Fore wing leaden grey suffused with purplish red; traces of waved subbasal and antemedial lines; claviform defined by white and black scales; orbicular and reniform with white annuli defined by black, the former large, somewhat elliptical, open above; postmedial line indistinct, defined by grey on inner side, obscurely dentate, bent outwards below costa, excurved to vein 4, then oblique; an indistinct grey subterminal line, angled outwards at vein 7 and excurved at middle; cilia with whitish line at base. Hind wing white, the veins and terminal area browish; cilia white; the underside with the costal area irrorated with brown, a slight discoidal spot.

Hab. W. Turkestan, Kuruk Tag, 1 ♂, 1 ♀; Thian-Shan Mts. *Exp.*, ♂ 42, ♀ 44 millim.

925. **Lycophotia astricta.** (Plate LXXIV. fig. 12.)

Eurois astricta, Morr. Proc. Bost. Soc. N. H. xvii. p. 135 (1874); Smith, Cat. Noct. N. Am. p. 68.

♂. Head and thorax black-brown, some of the scales tipped with white, pectus and legs with the hair grey at tips; abdomen blackish brown, the anal tuft reddish brown, the ventral surface irrorated with grey. Fore wing blackish brown slightly irrorated with white; the medial area greyer suffused with black-brown; some rufous suffusion in, below, and beyond the cell; the subbasal line indistinct, black from costa to submedian fold; the antemedial line indistinct, waved, more strongly excurved above inner margin; claviform obsolescent, its outer edge defined by black; orbicular and reniform large, indistinct, with blackish patches before and between them; an indistinct sinuous medial line from cell to inner margin; postmedial line minutely dentate, defined by grey on outer side bent outwards below costa, excurved to vein 4, then incurved; subterminal series of indistinct black dentate marks, angled outwards at vein 7; a terminal series of small black lunules. Hind wing brown, with traces of a grey postmedial line and a crenulate blackish terminal line; cilia whitish; the underside grey irrorated with brown, and with indistinct discoidal spot and curved postmedial and subterminal lines.

Hab. Canada; U.S.A., N. States, N. Woods (*Thaxter*), 1 ♂, New Hampshire, New York. *Exp.* 50 millim.

*926. Lycophotia nigra. (Plate LXXIV. fig. 13.)

Peridroma nigra, Smith, Trans. Am. Ent. Soc. xxi. p. 43, pl. 1 (1894).

Fuscous brown thickly irrorated with black; abdomen rather paler. Fore wing with the markings more or less interrupted; subbasal line double, black, with white irroration in included space, terminating in a reddish blotch at base of wing; antemedial line double, black, with white and ochreous scales in included space, erect, excurved below costa and above inner margin; claviform small, irrorated with white and ochreous and defined by black; orbicular irregular, oblique, with some white irroration at centre and a white annulus defined by black; reniform large, with pale irroration at centre, some white or ochreous scales representing the annulus and defined by black; a diffused medial shade; postmedial line double, the inner line lunulate, the outer indistinct, with white and ochreous scales in included space, bent outwards below costa, excurved to vein 4, then incurved; subterminal line whitish or ochreous, irregular, interrupted, defined on inner side by a series of black lunules; a terminal series of black lunules. Hind wing dirty white with dark irroration and a clearer terminal band; an indistinct discoidal point and postmedial line; a terminal line; the underside whitish with dark irroration.

Hab. U.S.A., Utah, Salt Lake City, Colorado (*Bruce*). *Exp.*, ♂ 50, ♀ 53 millim. This species is unknown to me; figured from drawing from type in Brooklyn Inst. Arts & Sci.

Sect. V. Antennæ of male ciliated.

A. (*Peridroma*). Pro- and metathorax with divided crests.

a. Hind wing uniform fuscous.

a^1. Fore wing with the postmedial line very highly dentate at middle ..... *denticulata.*

b^1. Fore wing with the postmedial line moderately dentate.

a^2. Fore wing with the ground-colour grey.

a^3. Hind wing blackish; expanse about 60 millim. *occulta.*

b^3. Hind fuscous; expanse about 40 millim. ..... *præfixa.*

b^2. Fore wing with the ground-colour red-brown..... *erythrina.*

b. Hind wing white, the veins and terminal area fuscous.

a^1. Fore wing with the costal area suffused with black.

a^2. Thorax with the crests pale rufous, contrasting ... *ochronota.*

b^2. Thorax with the crests concolorous ..... *semifusca.*

b^1. Fore wing with the costal area concolorous or paler ..... *margaritosa.*

c. Hind wing entirely white or slightly tinged with fuscous.

a^1. Fore wing with black streak below base of cell.

a^2. Fore wing with the orbicular confluent with the reniform ..... *demutabilis.*

b^2. Fore wing with the orbicular elongate..... *vocalis.*

c^2. Fore wing with the orbicular oblique, elliptical.

a^3. Fore wing with the ante- and postmedial lines confluent above inner margin ..... *eminens.*

b^3. Fore wing with the ante- and postmedial lines not confluent above inner margin.

a^4. Fore wing with the reniform angled inwards on median nervure ..... *elegans.*

b^4. Fore wing with the reniform not angled inwards on median nervure ..... *larixia.*
d^2. Fore wing with the orbicular small, round.
a^3. Fore wing with the antemedial line strong, dentate ..... *grandipennis.*
b^3. Fore wing with the antemedial line indistinct, waved ..... *rudens.*
b^1. Fore wing without black streak below base of cell.
a^2. Fore wing with the cell black before and between the stigmata.
a^3. Fore wing grey-white ..... *tamerlana.*
b^3. Fore wing pale rufous ..... *chaldaica.*
c^3. Fore wing brownish grey ..... *funcei.*
b^2. Fore wing with the cell not filled in with black ... *pellucidalis.*

927. Lycophotia denticulata. (Plate LXXIV. fig. 14.)

Ochropleura denticulata, Warr. P. Z. S. 1888, p. 307; Hmpsn. Moths Ind. ii. p. 194.

Head and thorax dark red-brown mixed with black; abdomen fuscous brown, the anal tuft red-brown. Fore wing purplish brown, irrorated with black and slightly suffused with fuscous; the costal area paler to the postmedial line; a slight black streak below base of cell; an indistinct waved subbasal line from costa to submedian fold; a double antemedial line filled in with pale rufous, obsolescent and angled outwards towards costa, below the cell oblique, and slightly sinuous; claviform large, indistinctly outlined with black; orbicular and reniform large, defined by black, the former pale, oblique, open above, the latter with fuscous centre, the cell between them blackish or with small wedge-shaped blackish mark; postmedial line double, filled in with ochreous, oblique from costa to vein 6, then highly dentate to vein 2 and angled outwards on vein 1; the subterminal line angled outwards at vein 7 and excurved at middle, defined by diffused dentate black marks on its inner side; a terminal series of black points, a fine pale line at base of cilia. Hind wing fuscous brown; the cilia pure white; the underside pale irrorated with fuscous, a discoidal lunule, curved postmedial line, and the terminal area suffused with fuscous.

Hab. Kashmir, Goorais Valley (*Leech*), 1 ♀; Punjab, Thundiani (*Yerbury*), 3 ♂, type. *Exp.* 60 millim.

928. Lycophotia occulta.

Noctua occulta, Linn. Syst. Nat. i. p. 514 (1757); Clerck, Icones, pl. 1. f. 6; Hübn. Eur. Schmett., Noct. f. 79; Staud. Cat. Lep. pal. p. 153; Smith, Cat. Noct. N. Am. p. 68.
Hadena implicata, Lef. Ann. Soc. Ent. Fr. 1836, p. 394, pl. 10. f. 4; Herr.-Schäff. Schmett. Eur. f. 632.
Agrotis passetii, Th.-Mieg. Le Nat. 1886, p. 237.

Head and thorax grey and fuscous-black mixed; tarsi ringed with white; abdomen grey-brown. Fore wing grey-white, strongly irrorated and suffused with black-brown and slightly with reddish brown; a black streak below base of cell; the subbasal line double, waved, from costa to submedian fold, filled in with whitish; the

antemedial line oblique, double, waved, filled in with whitish; the claviform grey, defined by black, large, conical; the orbicular and reniform large, grey defined by black and with some fuscous suffusion at middle, the former oblique, elliptical, open above, the area before, between, and below the stigmata suffused with dark brown; the postmedial line double, dentate, filled in with white, bent outwards below costa, oblique to vein 5 where it is angled, then inwardly oblique; the subterminal line formed by a series of dentate whitish and black marks, angled outwards at vein 7, the dentate marks above veins 5 and 4 almost reaching the postmedial line, excurved between veins 4 and 2, and incurved in submedian interspace; a terminal series of small black lunules; cilia brownish. Hind wing brown, the cilia white; the underside grey irrorated with brown especially on terminal area; a large discoidal lunule and curved postmedial line.

Ab. 1. *implicata*. Smaller, duller grey with the markings indistinct.—Greenland, Finland.

Ab. 2. *passeti*. The ground-colour almost black.—Scotland. Hartz Mts.

Hab. Greenland; Canada, Orilla (*Bush*), 1 ♂, Br. Columbia; U.S.A., N. & E. States, 1 ♂, Massachusetts, New York, Illinois Colorado; Europe, Central and Southern; Germany, Zeller & Frey Colls., 3 ♂, 4 ♀; Russia, Finland, 1 ♂, St. Petersburg, 1 ♂, 1 ♀; Northern Asia; Central Asia; Amurland, Ussuri; Corea, Gensan (*Leech*), 1 ♂. *Exp.* 60–66 millim.

Larva. Meyr. Brit. Lep. p. 97; Barrett, Lep. Brit. iv. p. 108, pl. 150. f. 1. Brown with darker irroration; dorsal and subdorsal lines pale yellowish, the latter including a series of oblique dark marks; spiracular lines whitish, the dots pale yellowish; head brown. Food-plants: *Primula, Taraxacum,* etc. 9–5.

*929. Lycophotia præfixa.

Agrotis præfixa, Morr. Proc. Bost. Soc. N. H. xviii. p. 117 (1875); Smith, Cat. Noct. N. Am. p. 68.

♀. Ash-grey sparsely irrorated with black. Fore wing with the markings fuscous or black; a small dark basal patch; the subbasal line double; the antemedial line oblique, sinuous; claviform strongly defined by black; orbicular and reniform large, concolorous or pale, the former rather oblique, elliptical, open above, the latter erect, narrow, with an unusually straight inner edge; the cell between the stigmata dusky; a faint, rather narrow medial shade; postmedial line double at costa, then crenulate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line pale, defined on inner side by a broad dark shade and on outer side by a slight shade not reaching costa or inner margin; a lunulate dark terminal line. Hind wing pale fuscous, darker towards termen; the underside grey irrorated with fuscous brown, a dark discoidal lunule and postmedial line.

Hab. U.S.A., Rocky Mts. *Exp.* 42 millim. This species is unknown to me.

930. Lycophotia erythrina.

Agrotis erythrina, Ramb. Ann. Soc. Ent. Fr. 1849; Herr.-Schäff. Schmett. Eur., Noct. f. 543; Staud. Cat. Lep. pal. p. 136.

Head and thorax bright purplish red to dark brown, the scales tipped with grey; palpi blackish at sides, whitish at tips; tarsi blackish ringed with white; abdomen grey-brown. Fore wing bright purple-red to dark brown slightly irrorated with white; the costa blackish; a waved blackish subbasal line from costa to submedian fold, defined by whitish on inner side; a waved antemedial line defined by whitish on inner side, and strongly angled inwards on median nervure and vein 1; orbicular and reniform represented by a few white scales; postmedial line black defined by whitish on outer side, dentate and produced to white points at the veins, bent outwards below costa, excurved to vein 4, then incurved, the veins beyond it slightly streaked with black; some white points on costa towards apex; subterminal line indistinct, whitish, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing fuscous brown with an ochreous tinge, the cilia whitish with brown line at base; the underside whitish irrorated with brown, the costal area suffused with brown, a brown discoidal spot and curved postmedial line.

Hab. C. & S. France, Sand & Zeller Colls.; Switzerland; Spain. *Exp.* 30–34 millim.

931. Lycophotia ochronota, n. sp. (Plate LXXIV. fig. 15.)

♀. Head and thorax fuscous black; palpi in front and at extremity and lower part of frons pale ochreous; tegulæ tipped with ochreous; dorsal crest ochreous; abdomen fuscous brown, the anal tuft ochreous. Fore wing ochreous brown, strongly irrorated with dark brown; the costal area to below the cell suffused with fuscous; indistinct double, waved, black subbasal and antemedial lines filled in with ochreous, the former extending to vein 1, the latter oblique; claviform absent; orbicular and reniform large, black with ochreous annuli, the former elliptical; the postmedial line indistinct, dentate, bent outwards below costa, excurved to vein 4, then incurved; an ochreous subterminal line angled outwards at vein 7 and excurved at middle, the area beyond it fuscous; a terminal series of black points. Hind wing semihyaline white; the veins brown; the costal and terminal areas broadly brown; cilia ochreous white, with a brown line at base; the underside with the costal and terminal areas irrorated with brown; a postmedial series of dark points on the veins.

Hab. Uruguay (*Darwin*), 1 ♀ type. *Exp.* 50 millim.

932. Lycophotia semifusca. (Plate LXXIV. fig. 16.)

Agrotis semifusca, Butl. Trans. Ent. Soc. 1882, p. 129.

♂. Head and thorax fuscous black; palpi pale at extremities; abdomen fuscous, with greyish segmental lines. Fore wing pale brownish grey irrorated with fuscous; the costal area broadly suffused

with fuscous; traces of a waved double subbasal line from costa to vein 1: an indistinct waved double antemedial line obsolete on the pale area; claviform represented by a dark spot; orbicular and reniform large, with brownish annuli defined by black and fuscous centres, the former somewhat elliptical; traces of a dentate postmedial line produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; an indistinct subterminal line angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing semihyaline white; the veins, costal area, and termen suffused with fuscous; cilia white, with a brown line at base; the underside with the costal area irrorated with brown; a postmedial series of dark points on the veins.

♀. Fore wing with the ground-colour fuscous to the postmedial line, the terminal area brown suffused with fuscous; claviform well developed and defined by black; hind wing with the terminal area broadly suffused with brown.

Hab. Chile (*Edmonds*), 1 ♂ type, Coquimbo (*J. J. Walker*), 1 ♀. *Exp.* 44 millim.

933. **Lycophotia margaritosa.**

Noctua margaritosa, Haw. Lep. Br. p. 218 (1809).
Noctua saucia, Hübn. Eur. Schmett., Noct. f. 378 (1827); Staud. Cat. Lep. pal. p. 152; Smith, Cat. Noct. N. Am. p. 69.
Noctua æqua, Hübn. Eur. Schmett., Noct. f. 564 (1827).
Brotis orophila, Geyer, Zutr. Exot. Schmett. v. p. 7, ff. 809, 810 (1837).
Agrotis inermis, Harris, Rep. Ins. Mass. p. 323 (1841).
Spælotis stictica, Blanch. Gay's Chile, vii. p. 73, pl. 6. f. 8 (1854).
Spælotis infuscata, Blanch. Gay's Chile, vii. p. 74 (1854).
Agrotis impacta, Wlk. x. 337 (1856).
Agrotis intecta, Wlk. x. 338 (1856).
Agrotis ambrosioides, Wlk. xi. 738 (1857).
Agrotis angulifera, Wllgrn. Wien. ent. Mon. iv. p. 169 (1860).
Agrotis ortonii, Pack. 1st Rep. Peab. Ac. Sci. p. 63 (1869).
Noctua æqua, ab. *philippsi*, Caspari, Jahrb. Nass. liii. p. 201, pl. iv. ff. 14, 15 (1899).

Head and thorax brown mixed with ochreous; palpi fuscous except towards extremity; thoracic crest often whitish; abdomen grey-brown. Fore wing brownish ochreous irrorated with brown;

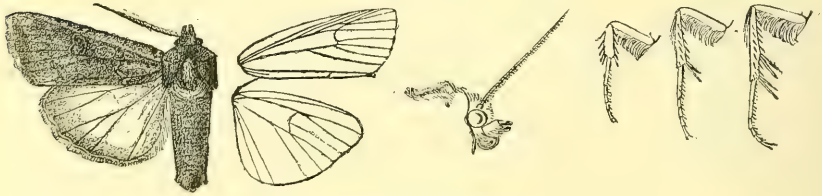


Fig. 92.—*Lycophotia margaritosa*, ♂. ½.

a double waved subbasal line from costa to vein 1; a double waved antemedial line; claviform moderate, with brown outline and line in centre; orbicular and reniform large with brown outlines, the former elliptical, the latter with fuscous in its lower portion; the

postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line ochreous, angled outwards at vein 7 and dentate at veins 4 and 3, with fuscous spots on its inner side at costa and on its outer from below apex to middle; a terminal series of small dark lunules. Hind wing semihyaline white, the veins and marginal areas brown; the underside with discoidal point and the costal area irrorated with brown.

Ab. 1. Head, thorax, and fore wing dark brown, the last with the costal area, orbicular, subterminal area, and an apical patch grey.

Ab. 2. *saucia*. Head, thorax, and fore wing much more uniform grey-brown.

Hab. Canada (*Norman*), 1 ♂; U.S.A., Eastern States, 4 ♂, 3 ♀, Kansas, 2 ♂, 1 ♀, California, Sanzalito, 4 ♂, 4 ♀: Mexico (*Sallé*), 1 ♂, 2 ♀, type *intecta*, Sonora (*Morrison*), 1 ♂, Durango (*Forrer*, *Becker*), 1 ♂, 3 ♀, Misantla (*Trujillo*), 1 ♀, Milpas (*Forrer*), 1 ♂, 1 ♀, Jalapa (*Hoege*), 2 ♂, 1 ♀, Coatepec (*Brooks*), 1 ♀; Guatemala (*Champion*), 1 ♀, Irazu (*Rogers*), 5 ♂, 1 ♀; Costa Rica (*Underwood*), 1 ♂, 2 ♀, Godman-Salvin Coll.; Jamaica, 1 ♀; Colombia, Bogota (*Stevens*), 2 ♀ type *ambrosioides*; Venezuela, 1 ♀ type *impacta*; Brazil, Rio Janeiro, 1 ♂; Chile (*Edmonds*), 1 ♂, Valparaiso (*J. J. Walker*), 1 ♂, 1 ♀, Payta (*J. J. Walker*), 1 ♂, types † ♂ *stictica* and ♀ *infuscata* in Mus. Paris; Argentina, type † *angulifera* in Mus. Stockholm; Azores, Flores (*J. J. Walker*), 1 ♂; Canaries (*Leech*), 1 ♂, 1 ♀; Britain, Ireland; France; Germany, Zeller Coll.; Switzerland, Frey Coll.; Austria; N. Africa; Armenia; Asia Minor; Syria, Brussa, 2 ♂, 1 ♀; Persia, Fao (*Cumming*), 1 ♂; Hawaii (*Perkins*), 1 ♀. *Exp.* 40–52 millim.

Larva. Meyr. Brit. Lep. p. 93; Barrett, Lep. Brit. iii. p. 372, pl. 135. f. 1.

(Redescribed.) Head 3 millim., pale brown, weakly reticulate in dark brown, curved vertical band broad and distinct, well bent at apex of clypeus, line upward from eye not strong, brownish. Body brown, the cream-coloured ground not so fully obscured by brown dots and mottlings as usual, predominant subdorsally posteriorly and over the posterior dorsal half of somite 12; dorsal line pale, obscure, broken but forming a series of often prominent whitish patches on somites 4 to 7; brown oblique subdorsal shades faint, forming rather distinct darker edging, the pale subdorsal line above and a triangular dorsal patch on somite 12 anteriorly joining the subdorsal streaks of that segment. Lateral area with dark brown mottled oblique shades, reversed in direction to the subdorsal ones. Substigmatal band obscure, broadly reddish filled, edged above by undulating pale line, shading below into pale subventral area. A general feeder.—H. G. D.

934. **Lycophotia demutabilis.** (Plate LXXIV. fig. 17.)

Peridroma demutabilis, Smith, Insect Life, v. p. 328, f. 46 (1893).

♀. Head and thorax white slightly mixed with brown; sides of palpi and frons blackish; tegulæ tipped with black; tibiæ and tarsi tinged with fuscous; abdomen white irrorated with fuscous

Fore wing grey-white; the veins slightly defined by brownish streaks; some brownish suffusion on costal area, in cell and below its extremity; a black streak below basal half of cell, with some brownish on its lower edge; claviform elongate, pointed at extremity and defined by blackish; orbicular and reniform white prominently defined by black, the former elongate and confluent with the latter, which has a brown centre and with its lower extremity somewhat angled inwards on median nervure; the subterminal line defined by the area beyond it being suffused with black, consisting of short oblique black streaks below veins 7 and 6 running obliquely from near termen to an angle in discal fold, then excurved, somewhat dentate and below vein 3 incurved; a fine terminal black line; cilia white slightly tinged with brown. Hind wing white tinged with brown, the cilia pure white; the underside white, the costal area slightly irrorated with black, a slight discoidal lunule.

Hab. U.S.A., Arizona, Yuma Co., 1 ♂. *Exp.* 30 millim.

935. **Lycophotia vocalis.** (Plate LXXIV. fig. 18.)

Agrotis vocalis, Grote, Can. Ent. xi. p. 56 (1879); id. Ill. Essay, 54, pl. ii. f. 15; Smith, Cat. Noct. N. Am. p. 77.
Agrotis invenusta, Grote, Trans. Kans. Ac. Sci. viii. p. 48 (1883).

Head and thorax grey-white mixed with fuscous black and sometimes slightly with brown; palpi black except at tips; tegulæ with the tips black or dark brown with white line before them; abdomen grey irrorated with brown. Fore wing grey, more or less strongly irrorated with black and often with some rufous suffusion on medial area below the cell; a black streak usually present below the cell from base to beyond the antemedial line; the subbasal line angled outwards below costa and ending at the streak; the antemedial line black, minutely dentate, oblique, with a longer tooth above inner margin; the cell black before and between the stigmata defining the orbicular, which is elongate and often almost connected with the inner edge of the reniform, which is undefined on outer side; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique; a terminal series of dark points. Hind wing white, the veins and terminal area slightly tinged with brown. Underside of both wings with discoidal spots and curved postmedial line obsolete except towards costa; hind wing with the costal area irrorated with brown.

Ab. 1. *invenusta*. Darker, the markings of fore wing indistinct.

Hab. U.S.A., Colorado (*Bruce*), 2 ♂, 2 ♀ type, Nevada, 1 ♂, New Mexico. *Exp.* 38 millim.

936. **Lycophotia eminens.** (Plate LXXIV. fig. 19.)

Graphiphora eminens, Led. Verh. zool.-bot. Ges. Wien, p. 106, pl. 1. f. 3 (1855); Staud. Cat. Lep. pal. p. 139.
Agrotis excellens, Staud. Stett. ent. Zeit. 1867, p. 107.

Head and thorax brownish grey mixed with dark brown; palpi blackish except at tips; tegulæ black at base and tips, patagia

irrorated with some black scales; abdomen grey irrorated with brown. Fore wing brownish grey; the subbasal line double, waved from costa to submedian fold and with some blackish marks beyond it, most prominent below the cell; the antemedial line double, black, bent outwards below costa and angled outwards above inner margin, where it becomes confluent with the double postmedial line, which is minutely waved, excurved from costa to vein 5, then oblique, below vein 2 slightly excurved, then running inwards to join the antemedial line above inner margin; stigmata with pale streaks on brown centres and grey annuli defined by black; the claviform very large; the orbicular oblique, elliptical, the cell before and between the stigmata filled in with brown and the base of interspaces from vein 7 to below 2 filled in with brown; the subterminal line represented by a series of ochreous dentate marks with dentate black marks before them, angled outwards at vein 7 and excurved at middle; a fine waved terminal line and line at base of cilia. Hind wing white, the veins tinged with brown; a fine terminal line and line through the cilia; the underside with the costal area irrorated with brown.

Hab. W. Siberia, Altai; W. Turkestan, Sir-Darya, 1 ♂, 1 ♀, Saisan, Issyk-kul; E. Turkestan, Ili. *Exp.* 42 millim.

937. Lycophotia elegans.

Noctua elegans, Ev. Bull. Mosc. 1837, p. 33; Staud. Cat. Lep. pal. p. 141.
Hadena grammiptera, Boisd. Ind. Meth. p. 119 (1840); Dup. Lép. Fr., Suppl. iii. p. 450, pl. 40. f. 1; Herr.-Schäff. Schmett. Eur. ii. pl. 1. ff. 3, 4.
Noctua cancellata, Frey. Neu. Beitr. Schmett. iv. pl. 303. f. 2 (1842).

♂. Head and thorax white mixed with brown and black; palpi blackish at sides except at tips; tegulæ blackish at base and with black medial line; tarsi blackish with pale rings; abdomen white. Fore wing pale fuscous brown; the veins streaked with white to the postmedial line; the subbasal line represented by oblique black striæ from costa and median nervure, defined by white on outer side and with some black suffusion between them and the antemedial line, which is defined by white on each side, angled outwards above and below subcostal nervure, then oblique, and above inner margin very strongly angled outwards; claviform large, pointed at extremity, defined by white and black; orbicular and reniform with white annuli defined by black, the former with brown centre, oblique, elliptical, the latter with white centre defined by brown and angled strongly inwards on median nervure, the area between them more or less suffused with black; an indistinct waved line from lower angle of cell to inner margin; the postmedial line defined by white on outer side, minutely waved, bent outwards below costa, excurved to vein 4, then slightly incurved; the subterminal line whitish, angled outwards at vein 7 and slightly excurved at middle, defined on inner side by a blackish patch at costa, then by a series of elongate wedge-shaped marks; a fine terminal black line. Hind wing white with diffused subterminal brownish band and fine

terminal line; the underside with rather indistinct sinuous postmedial line.

♀. Hind wing with the terminal half, or almost entirely, suffused with brown.

Hab. France, Sand Coll.; N. Spain; Greece, Mts.; S. Russia, Sarepta, Zeller Coll.; Armenia; Asia Minor, Pontus, Taurus; Syria, Leech Coll.; Persia; W. Siberia, Zeller Coll., Altai; W. Turkestan, Issyk-kul. *Exp.* 38–40 millim.

938. Lycophotia larixia.

Agrotis larixia, Guen. Noct. i. p. 310 (1852); Herr.-Schäff. Neue Schmett. f. 125; Staud. Cat. Lep. pal. p. 141.

♂. Head and thorax grey mixed with fuscous; tegulæ with black medial line and white tips; abdomen grey tinged with brown, the anal tuft with ochreous. Fore wing pale brown; the veins streaked with white to the postmedial line; the subbasal line represented by oblique black striæ from costa and median nervure, defined by white on outer side and the latter with diffused black streak beyond it; the antemedial line defined by whitish on inner side, somewhat oblique and very strongly angled outwards above inner margin; claviform large, defined by whitish and black; orbicular and reniform whitish defined by black, the former oblique, elliptical, the cell before and between them slightly suffused with black; an indistinct diffused oblique line from lower angle of cell to inner margin; the postmedial line defined by whitish on outer side, minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; the subterminal line indistinct, greyish, defined on inner side by a series of dentate black marks; cilia pale, with a black line through them. Hind wing pale suffused with fuscous; the cilia white, with a brown line at base; the underside white irrorated with fuscous, an indistinct sinuous postmedial line.

Hab. Alps of S. France and N. Italy, 2 ♂; Armenia; Persia; W. Turkestan, Mts. *Exp.* 42 millim.

*939. Lycophotia grandipennis. (Plate LXXIV. fig. 20.)

Agrotis grandipennis, Grote, A. M. N. H. (5) xi. p. 54 (1883); Smith, Cat. Noct. N. Am. p. 69.

♂. Grey tinged with purplish red-brown; abdomen whitish. Fore wing with the veins slightly streaked with black; a dark streak below base of cell; the antemedial line indistinctly double, dentate, strongly above inner margin; the other lines obsolete or only marked at costa; orbicular small, round, pale with a dark point at centre; reniform small, ill-defined, pale with red-brown centre; a slight dark streak between and beyond the stigmata; a distinct terminal series of black marks. Hind wing white slightly tinged with fuscous, the veins darker; the underside whitish, with darker discoidal lunule and postmedial line.

Hab. U.S.A., New Mexico. *Exp.* 45–52 millim. This species is unknown to me; figured from a drawing from type in Brooklyn Inst. Arts & Sci.

940. Lycophotia rudens. (Plate LXXIV. fig. 21.)

Agrotis rudens, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 271 (1874); Smith, Cat. Noct. N. Am. p. 69.

♂. Head pale yellow or orange-yellow; palpi black-brown, whitish at tips; tegulæ pale yellow at base, then with black medial band, the tips grey pencilled with brown; thorax grey pencilled with brown and often tinged with purple-red; legs banded with black; abdomen grey-white irrorated with brown, the anal tuft tinged with ochreous. Fore wing pale grey irrorated with brown, the costal area tinged with red on outer half of wing; a black streak below the cell from near base to near middle, downcurved towards base; traces of waved subbasal and antemedial lines, the former ending at vein 1; orbicular and reniform small, grey with slight fuscous centres, defined by black and with black fascia above median nervure from before the orbicular to the reniform; a postmedial series of black points; the subterminal line defined by the area beyond it being brown except at apex, where there is a grey patch, angled outwards at veins 6, 4, and 3; a terminal series of black points. Hind wing semihyaline white, the veins, costa, and termen slightly tinged with brown; the cilia white, with a brown line at base; the underside with the costal area irrorated with brown; a terminal series of black points on costal half of wing.

♀. Head and base of tegulæ whitish instead of yellow.

Hab. U.S.A., Texas, 2 ♂, 1 ♀, type. *Exp.* 38–40 millim.

941. Lycophotia tamerlana. (Plate LXXIV. fig. 22.)

Agrotis tamerlana, Bang-Haas, ined.

Head and thorax white irrorated with black; palpi blackish except at tips; abdomen white slightly tinged with ochreous. Fore wing grey-white sparsely irrorated with black; a slight waved subbasal line from costa to submedian fold; the antemedial line indistinct, double, slightly sinuous, oblique towards costa; orbicular and reniform large, the former oblique and confluent with the latter at lower extremity, both open above and below and with slightly defined pale annuli, an L-shaped black-brown patch in cell before the former and a triangular patch between them; postmedial line indistinct, double, with a black point at costa, bent outwards below costa, excurved to vein 4, then oblique and sinuous; the subterminal line formed by a series of fuscous lunules, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules and a line at base of cilia. Hind wing pure white; the underside with the costal area irrorated with fuscous.

Hab. W. Turkestan, Sir-Darya, 1 ♂, 1 ♀. *Exp.* 42 millim.

942. Lycophotia chaldaica.

Noctua chaldaica, Boisd. Gen. et Ind. Meth. p. 140 (1840); Dup. Lép. Fr., Suppl. iii. p. 481, pl. 41. f. 5; Frey. Neu. Beitr. Schmett. iv. pl. 304. f. 1; Herr.-Schäff. Eur. Schmett., Noct. f. 110; Staud. Cat. Lep. pal. p. 139.
Agrotis spodia, Püng. Iris, xii. p. 289 (1899).

Head and thorax red-brown mixed with grey; palpi dark brown except at base; abdomen ochreous white, the ventral surface tinged with rufous. Fore wing grey tinged with pale rufous; a curved subbasal black line from costa to submedian fold interrupted at cell; a double subbasal line excurved from costa to submedian fold and above inner margin, the outer line prominently black from costa to submedian fold; claviform often slightly defined by whitish above; orbicular and reniform large with narrow white annuli, the former oblique, rather V-shaped, open above, the cell before and between them black; traces of a medial shade from cell to inner margin; a double postmedial line with a series of points on the veins beyond it, arising from a small black spot on costa, excurved from just below costa to vein 4, then oblique and sinuous; the subterminal line grey, defined by red-brown on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of dark points. Hind wing pure white, the veins slightly tinged with brown; the underside with the costal area irrorated with brown.

Ab. 1. *spodia*. Fore wing grey without rufous tinge.

Hab. Russia, Sarepta, 1 ♂, Urals, 1 ♂; W. Siberia, 2 ♂, 1 ♀, Altai; W. Turkestan, Turcomania, Ferghana, Tarbagatai Mts., Ala-tau, Issyk-kul; E. Turkestan, Ili. *Exp.* 40–44 millim.

*943. Lycophotia funcei. (Plate LXXIV. fig. 23.)

Agrotis funkei, Püng. Deutsche ent. Zeit., Lep. xiv. p. 181, pl. 2. ff. 1, 2 (1901).

Head and thorax brownish grey thickly irrorated with black; palpi blackish at sides; tarsi black with pale rings; abdomen brownish grey. Fore wing brownish grey thickly irrorated with black; the subbasal line represented by double black striæ from costa and cell; antemedial line double, prominent, rather irregularly waved and slightly oblique; claviform strongly and diffusedly defined by black; orbicular and reniform defined by black, the former round, open above, the cell black before and between the stigmata, a blackish streak in discoidal fold from reniform to subterminal line; postmedial line double, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct, dentate, and defined on inner side by an irregular series of dentate black marks, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules. Hind wing whitish tinged with brown, the veins and terminal area suffused with brown; cilia white with brown line at base; the underside with the costal area irrorated with brown.

Hab. W. Turkestan, Sarawschan, type † in Coll. Püngeler. *Exp.* 40 millim.

944. Lycophotia pellucidalis. (Plate LXXIV. fig. 24.)

Agrotis pellucidalis, Grote, Bull. Geol. Surv. vi. p. 567 (1882); Smith, Cat. Noct. N. Am. p. 69.

♂. Head fulvous yellow; palpi black, whitish at tips; tegulæ fulvous at base, with brown medial line, the tips grey pencilled

with brown; thorax grey irrorated with brown, the patagia with blackish edge above; legs banded black and white; abdomen grey strongly irrorated with fuscous. Fore wing pale grey strongly irrorated with brown; a double subbasal line from costa to vein 1 interrupted in cell; an indistinct double, waved, antemedial line; claviform rather small, outlined with brown; orbicular and reniform small, grey with fuscous centres and black outlines; a curved dentate postmedial line produced to points on the veins; the subterminal line defined by the area beyond it being dark, except at apex where there is a grey patch, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing semihyaline white, the veins and termen slightly tinged with brown; the underside with the costal area irrorated with brown; some terminal black points on costal half of wing.

♀. Head and base of tegulæ grey and brown.

Hab. U.S.A., Texas, 1 ♂, 1 ♀ type. *Exp.* 38 millim.

B. (*Hapalia.*) Pro- and metathorax with slight spreading crests.
  a. Fore wing with black streak below base of cell.
    a^1. Fore wing with the reniform angled inwards on median nervure.
      a^2. Fore wing with the reniform confluent with orbicular ..... *ocellina.*
      b^2. Fore wing with the reniform separate from orbicular ..... *alpestris.*
    b^1. Fore wing with the reniform not angled inwards on median nervure.
      a^2. Fore wing with the ground-colour brownish.
        a^3. Fore wing with the cell filled in by black.
          a^4. Fore wing with the veins streaked with white..... *multifida.*
          b^4. Fore wing with the veins not streaked with white..... *degeniata.*
        b^3. Fore wing with the cell not filled in by black.
          a^4. Fore wing with the orbicular elongate, open above..... *truculenta.*
          b^4. Fore wing with the orbicular entire, diamond-shaped ..... *toxistigma.*
      b^2. Fore wing with the ground-colour grey.
        a^3. Fore wing with the lines prominent ..... *hahni.*
        b^3. Fore wing with the lines obsolete.
          a^4. Fore wing with the orbicular absent ..... ♀*adorea.*
          b^4. Fore wing with the orbicular present.
            a^5. Fore wing with the cell black before and between the stigmata ..... ♀*microstigma.*
            b^5. Fore wing without black in cell ..... ♀*interrupta.*
      c^2. Fore wing with the ground-colour white, a black streak in and beyond end of cell ..... *candelisequa.*
  b. Fore wing without black streak below base of cell.
    a^1. Tegulæ with medial patch and tips black or rufous. *muscosa.*
    b^1. Tegulæ with black basal band.
      a^2. Fore wing with black patch between the stigmata.
        a^3. Fore wing with black patch before orbicular. *bitriangulaf.*
        b^3. Fore wing without black patch before orbicular..... *isopleura.*
      b^2. Fore wing without black patch between the stigmata.

a^3. Fore wing with the postmedial line straight from vein 6 to inner margin ..... *Sorthogramma.*
b^3. Fore wing with the postmedial line excurved beyond the cell.
a^4. Fore wing with dark striation.
a^5. Fore wing with the terminal area darker than the ground-colour.
a^6. Fore wing with the terminal area bright rufous ..... *Signicans.*
b^6. Fore wing with the terminal area dull rufous or fuscous ..... *Sinfecta.*
b^5. Fore wing with the terminal area concolorous.
a^6. Fore wing striated with rufous ..... *Sbiformis.*
b^6. Fore wing striated with fuscous.
a^7. Fore wing with the antemedial line slightly angled outwards above inner margin ..... *messia.*
b^7. Fore wing with the antemedial line strongly angled outwards above inner margin ..... *melanobasis.*
b^4. Fore wing with dark irroration.
a^5. Fore wing with the lines obsolescent.
a^6. Fore wing with the orbicular more or less developed.
a^7. Fore wing strongly irrorated with fuscous ..... *Sferruginescens.*
b^7. Fore wing slightly irrorated with fuscous ..... *Sminna.*
b^6. Fore wing with the orbicular obsolete . *dignata*
b^5. Fore wing with the lines prominent ..... *atricincta*
c^1. Tegulæ without black basal band.
a^2. Hind wing pure white in male, the terminal area sometimes tinged with brown in female.
a^3. Fore wing with black patch in cell between the stigmata.
a^4. Fore wing with the orbicular large, V-shaped ..... *gaurax.*
b^4. Fore wing with the orbicular rounded ..... *margaritacea.*
b^3. Fore wing without black patch in cell between the stigmata.
a^4. Fore wing with the stigmata very large, rounded, and with ochreous annuli ..... *insignata.*
b^4. Fore wing with the stigmata small or obsolete, without ochreous annuli.
a^5. Fore wing with prominent black subbasal line.
a^6. Fore wing with the stigmata present... *Sbutleri.*
b^6. Fore wing with the stigmata obsolete . *Syaxcaba.*
b^5. Fore wing with the subbasal line indistinct or absent.
a^6. Fore wing with dark irroration.
a^7. Fore wing grey-brown.
a^8. Fore wing with the stigmata represented by distinct black marks ..... *simplicia.*
b^8. Fore wing with the stigmata almost obsolete ..... *aspersa.*
b^7. Fore wing red-brown with prominent white reniform ..... *Sdiana.*
b^6. Fore wing ochreous white tinged with rufous and with black striation and irroration ..... *atrisparsa.*

b^2. Hind wing yellowish white.
a^3. Fore wing ochreous thickly irrorated with black ..... *perirrorata.*
b^3. Fore wing rufous suffused with fuscous..... *fuscirufa.*
c^3. Fore wing black-brown irrorated with grey ... *funebris.*
c^2. Hind wing white, the terminal area more or less suffused with brown in both sexes.
a^3. Fore wing grey to grey-brown.
a^4. Fore wing not suffused with red-brown.
a^5. Fore wing with black patch in cell between the stigmata ..... *sordescens.*
b^5. Fore wing without black patch in cell between the stigmata.
a^6. Fore wing with the lines obsolete ..... *tenuescens.*
b^6. Fore wing with the lines present ..... *conchidia.*
b^4. Fore wing more or less strongly tinged with red-brown.
a^5. Fore wing with the lines represented by black spots on costa.
a^6. Fore wing with the costa not white.
a^7. Fore wing without dark centre to reniform ..... *differens.*
b^7. Fore wing with dark centre to reniform.
a^8. Fore wing with the orbicular absent ..... *exuberans.*
b^8. Fore wing with the orbicular developed ..... *postventa.*
b^6. Fore wing with the costal edge white... *costigera.*
b^5. Fore wing with the lines well-developed.
a^6. Fore wing with the lines single.
a^7. Fore wing with the orbicular absent . *lubricans.*
b^7. Fore wing with the orbicular present. *pulverea.*
b^6. Fore wing with the lines double..... *pudens.*
b^3. Fore wing with the ground-colour pale ochreous.
a^4. Fore wing with the lines represented by black points on costa ..... *conformis.*
b^4. Fore wing with the lines prominent ..... *vallesiaca.*
d^2. Hind wing more or less strongly tinged with fuscous throughout.
a^3. Fore wing with the ground-colour grey or grey-brown to pale reddish brown or ochreous.
a^4. Fore wing broad, triangular.
a^5. Fore wing with the orbicular produced to a point on outer side ..... *pœcila.*
b^5. Fore wing with the orbicular rounded or obsolete.
a^6. Fore wing without rufous or ochreous tinge.
a^7. Fore wing with medial line.
a^8. Fore wing very prominently irrorated with dark brown..... *fugax.*
b^8. Fore wing less prominently irrorated with fuscous.
a^9. Fore wing with the ground-colour brownish ..... *photophila.*
b^9. Fore wing with the ground-colour grey ..... *electra.*
b^7. Fore wing without medial line ..... *caradrinoides.*

b^6. Fore wing tinged with rufous or ochreous.
a^7. Fore wing with the antemedial line single.
a^8. Fore wing with the orbicular present.
a^9. Fore wing with the stigmata distinct, pale.
a^{10}. Fore wing with the antemedial line strongly angled outwards above inner margin. *hadjina.*
b^{10}. Fore wing with the antemedial line not angled outwards above inner margin ... *macrina.*
b^9. Fore wing with the stigmata indistinct.
a^{10}. Fore wing with the ground-colour yellowish grey ..... *devota.*
b^{10}. Fore wing with a more rufous tinge ..... *renigera.*
b^8. Fore wing with the orbicular obsolete.
a^9. Fore wing with the terminal area concolorous ..... *pudica.*
b^9. Fore wing with the terminal area darker.
a^{10}. Fore wing with the lines prominent..... *umbrifera.*
b^{10}. Fore wing with the lines obsolescent ..... *spreta.*
b^7. Fore wing with the antemedial line double.
a^8. Fore wing with the terminal area dark ..... *fimbriola.*
b^8. Fore wing with the terminal area concolorous ..... *brunnescens.*
b^1. Fore wing narrow, elongate..... *molibdoida.*
b^3. Fore wing brown, suffused with black ..... *manalis.*
c^3. Fore wing with the ground-colour olive-green. *oliveata.*
d^3. Fore wing with the ground-colour grey-green.
a^4. Fore wing with dentate black marks before subterminal line ..... *præcurrens.*
b^4. Fore wing without dentate black marks before subterminal line ..... *præcox.*

945. Lycophotia ocellina.

Noctua ocellina, Schiff. Wien. Verz. p. 313 (1776); Hübn. Eur. Schmett., Noct. ff. 129, 439; Godt. Lép. Fr. v. p. 221, pl. 65. f. 1; Boisd. Ic. pl. 76. f. 3; Staud. Cat. Lep. pal. p. 142.
Noctua phyteumæ, Esp. Schmett. iv. pl. 192. ff. 3, 4 (1786).
Agrotis transiens, Staud. Iris, ix. p. 246 (1896).

Head and thorax reddish brown to dark brown mixed with grey; tegulæ with black medial line; tarsi with pale rings to the joints; abdomen black-brown, the anal tuft ochreous. Fore wing reddish brown or dark brown mixed with pale brown; the veins with pale streaks to the postmedial line; the subbasal line represented by black striæ from costa and median nervure defined by whitish on outer side and with a short black streak beyond them in submedian fold; the antemedial line defined by greyish on inner side, slightly

angled outwards below costa, then oblique and strongly angled outwards above inner margin; claviform elongate, defined by whitish and black; orbicular and reniform whitish with brown centres, the former oblique, elliptical, or small and round, the latter strongly angled inwards on median nervure, the cell before and between them black; the postmedial line defined by grey on outer side, bent outwards below costa, excurved to vein 4, then incurved and slightly angled outwards on vein 1; the subterminal line greyish, angled outwards at vein 7 and slightly excurved at middle, defined on inner side by a series of dentate black marks; a terminal series of small black lunules; cilia with blackish line through them. Hind wing fuscous brown, the cilia whitish with brown line through them; the underside with the costal area greyish, an ill-defined curved postmedial line.

Ab. 1. *transiens*. Paler and intermediate to *alpestris*, of which it may be a variety.—C. Asia.

Hab. France, Pyrenees; Switzerland, Valais, Engadine, Ortler, Zeller and Frey Colls.; Austria, Tyrol, Gr. Glockner; Hungary, Leech Coll.; Norway, Zeller Coll.; Russia, St. Petersburg; W. Siberia, Altai; W. Turkestan, Ferghana, Issyk-kul, Ala Tau, Tarbagatai; E. Turkestan, Thian-Shan Mts.; Mongolia, Uliassutai, Changai Mts.; Tibet, Amdo. *Exp.* 30–34 millim.

946. Lycophotia alpestris.

Noctua ocellina, Hübn. Schmett. Eur., Noct. f. 599 (nec Schiff.).
Chersotis alpestris, Boisd. Ic. Lep. Eur. pl. 76. ff. 4, 5 (1832); Dup. Lép. Fr. Suppl. iii. p. 454, pl. 40; Herr.-Schäff. Schmett. Eur. ii. pl. 1. ff. 5, 6; Staud. Cat. Lep. pal. p. 142.

Head and thorax reddish brown to fuscous brown mixed with grey; tegulæ with black medial line; tarsi with pale rings; abdomen ochreous or greyish irrorated with dark brown. Fore wing grey-brown; the veins with pale streaks to the postmedial line; the subbasal line represented by oblique black striæ from costa and median nervure, defined by whitish on outer side and with slight black streak beyond it in submedian fold; the antemedial line double, filled in with greyish, the outer line strong, blackish, slightly angled outwards below costa and in cell and more strongly above inner margin; the claviform elongate, defined by whitish and black; the orbicular and reniform with whitish centres defined by brown and whitish annuli defined by black, the former oblique, elliptical, the latter more or less strongly angled inwards on median nervure, the cell between them slightly suffused with black; an indistinct waved line from lower angle of cell to inner margin; the postmedial line defined by greyish on outer side, minutely dentate, bent outwards below costa, slightly angled inwards at discal fold and incurved below vein 4, the area beyond it with greyish dentate marks defining the dark veins and interdigitating with the series of dentate black marks before the indistinct greyish subterminal line, which is angled outwards at vein 7, slightly excurved and somewhat dentate at middle; cilia

ochreous with a brown line through them. Hind wing fuscous brown, paler towards base in male; cilia ochreous white with a brown line through them; the underside paler, the costal area irrorated with brown, a slight discoidal spot, sinuous postmedial line, and diffused subterminal band.

Hab. France, Pyrenees; N. Spain Mts.; Switzerland, Valais, Engadine, Frey and Leech Colls.; Norway, Zeller Coll.; Russia, Urals; Armenia; Syria, Lecch Coll.; Persia; W. Turkestan; Siberia, Zeller Coll.; Kamschatka. *Exp.* 34 millim.

947. Lycophotia multifida.

Agrotis multifida, Led. Ann. Soc. Ent. Belge, xiii. p. 46, pl. 1. f. 10 (1870); Rebel, Verh. zool.-bot. Ges. Wien, 1899, p. 165, pl. 4. f. 4; Staud. Cat. Lep. pal. p. 151.

Head and thorax grey mixed with red-brown; tegulæ whitish, with black patch at tips; abdomen ochreous white. Fore wing pale reddish brown, irrorated and in places suffused with black; the veins streaked with white; a sinuous black streak below base of cell; subbasal line represented by a black striga from costa; antemedial line obsolete from costa to median nervure, then double, angled outwards below cell and very strongly to join the postmedial line at inner margin; claviform slightly defined by black at extremity; the cell filled in with black; orbicular and reniform whitish defined by black and their centres by fuscous, the former oblique, elliptical; the postmedial line dentate, strongly bent outwards below costa, angled inwards at discal fold, and very oblique below vein 4 to join the antemedial line at inner margin; subterminal line only defined by a series of dentate black marks on its inner side interrupted between veins 7 and 3; a terminal series of small black lunules; a pale line at base of cilia. Hind wing white, the veins and margins tinged with brown; the underside with the costal area irrorated with brown, some postmedial dark points on the veins.

Hab. Austria, Tyrol, 1 ♀; Hungary; Armenia, in Coll. Püngeler. *Exp.* 34–36 millim.

948. Lycophotia degeniata.

Agrotis degeniata, Christ. Hor. Soc. Ent. Ross. xii. p. 244, pl. 6. f 18 (1876); id. Rom. Mém. ii. pl. xii. f. 4; Staud. Cat. Lep. pal. p. 136.
Agrotis defuncta, Staud. Iris, ix. p. 243, pl. 4. f. 8 (1896).
Agrotis persica, Staud. Iris, ix. p. 243 (1896).

♀. Head and thorax grey-brown; palpi blackish at sides except at tips; vertex of head with black spot; tegulæ with black lines near base and extremity; patagia with black patches; tarsi banded with black; abdomen ochreous whitish, the ventral surface irrorated with brown. Fore wing grey-brown tinged with fuscous; the subbasal line represented by black striæ from costa; a black streak in submedian fold to the antemedial line, which is double, dentate, and rather indistinct; claviform slightly outlined with black and with a

black streak from it to postmedial line; orbicular and reniform brownish ochreous defined by black, the former elliptical, the cell before and between them black, a black streak from the reniform to the postmedial line, which is double, dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line ochreous defined by black suffusion before it, angled outwards at vein 7 and excurved at middle, then angled inwards in submedian fold; a terminal series of small black lunules. Hind wing pale ochreous suffused with fuscous brown; the veins darker; the cilia ochreous white; the underside whitish, the costal area irrorated with brown, a discoidal point and curved postmedial line on costal area.

Ab. 1. *defuncta*. Browner; fore wing with the markings more distinct.—Issyk-kul, Ili.

Hab. Persia; W. Turkestan, Ferghana, Issyk-kul, 1 ♀; E. Turkestan, Ili. *Exp.* 42–46 millim.

949. **Lycophotia truculenta.** (Plate LXXIV. fig. 26.)

Agrotis truculenta, Led. Verh. zool.-bot. Ges. Wien, 1853, p. 367, pl. 3. f. 3; Staud. Cat. Lep. pal. p. 147.

♂. Head and thorax pale grey-brown mixed with black; patagia edged with blackish; abdomen brownish grey. Fore wing grey suffused with ochreous brown; claviform a long narrow streak extending almost to base and defined by black except above towards base; orbicular and reniform with brown centres and whitish annuli, the former very elongate wedge-shaped and defined by black except above towards base, the latter defined by black on inner side and slightly on outer side and below; some white points on costa towards apex; the subterminal line indistinct, whitish, dentate, angled outwards at vein 7 and excurved at middle, defined on inner side by a series of wedge-shaped black marks; a waved terminal black line; cilia whitish, with brown lines through them. Hind wing white, the veins towards termen and a fine terminal line brown; the underside with the costal area irrorated with brown.

Hab. W. Siberia, 1 ♂, Zeller Coll., Altai; W. Turkestan, Issyk-kul; E. Turkestan, Ili. *Exp.* 44 millim.

950. **Lycophotia toxistigma**, n. sp. (Plate LXXIV. fig. 27.)

♂. Head and thorax pale brown mixed with black; tegulæ with black medial line and tips; patagia edged with black; tarsi banded with black. Fore wing brownish white; the veins streaked with fuscous; a black streak below base of cell confluent with the claviform, which is elongate, defined by black and filled in with fuscous; subbasal line represented by two black spots on costa, the antemedial line by two black spots on costa and an angle above inner margin; cell filled in with fuscous; orbicular and reniform with brownish centres and white annuli defined by black, the former diamond-shaped, the latter large; postmedial line represented by two black spots on costa; subterminal line white, punctiform, angled outwards

at vein 7 and slightly excurved at middle, defined on inner side by a prominent series of dentate black marks defined by whitish V-shaped marks; a terminal series of small black lunules; cilia with a dark line through them. Hind wing pure white with fine brown terminal line.

Hab. Syria, 1 ♂ type. *Exp.* 36 millim.

951. Lycophotia hahni.

Agrotis hahni, Christ. Rom. Mém. ii. p. 33, pl. 2. f. 8 (1885); Staud. Cat. Lep. pal. p. 141.

♂. Head and thorax ochreous; palpi blackish at sides; tegulæ blackish in front; patagia irrorated with black; tarsi banded with black; abdomen ochreous white. Fore wing ochreous slightly tinged with fuscous, the terminal area strongly suffused with black; a waved subbasal black line from costa to submedian fold, in which there is a short black streak from its extremity; the antemedial line oblique, double, the inner slight, the outer strong, black, excurved below costa and cell and above inner margin; claviform represented by a small black lunule at its extremity, with a streak from it to postmedial line; orbicular and reniform defined by the cell before and between them and the area between the latter and postmedial line being black, the former rather produced on outer side; traces of a waved medial line; the postmedial line indistinctly double, dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line indistinct, pale, defined by black suffusion before and beyond it, angled outwards at vein 7, excurved and dentate at middle; a terminal series of black points. Hind wing white, the veins and marginal areas tinged with brown; underside white, the costal area tinged with ochreous.

♀. Head, thorax, and fore wing greyer and less ochreous, the last more suffused with fuscous and with the black markings rather less prominent.

Hab. Armenia; N. Persia, Askhabad, 1 ♂, 1 ♀; W. Turkestan. *Exp.*, ♂ 34, ♀ 38 millim.

*952. Lycophotia adorea. (Plate LXXVIII. fig. 3.)

Leucania adorea, Schaus, Trans. Am. Ent. Soc. xxi. p. 233 (1894).

♂. Head and thorax violaceous white; palpi dark brown except at tips; vertex of head, basal joint of antennæ, and medial and terminal bands on tegulæ dark brown; pectus brown mixed with purple; legs white above, blackish below; abdomen ochreous irrorated with fuscous, the anal tuft and ventral surface pinkish. Fore wing violaceous white irrorated with black, the veins streaked with brown defined by whitish; a black fascia below the cell from base to origin of vein 2; orbicular a small elliptical black spot; a brown fascia in lower end of cell; some brown suffusion beyond upper angle of cell; some brown in subterminal part of discal fold and above and below vein 2; some slight subterminal streaks on

apical half. Hind wing semihyaline white ; the underside with the costal area tinged and irrorated with brown, some black points on apical part of costa.

Hab. Brazil, São Paulo, type† ♂ in Coll. Schaus. *Exp.* 34 millim.

*953. Lycophotia microstigma. (Plate LXXVIII. fig. 4.)

Lycophotia microstigma, Schaus, ined.

♂. Head and thorax ochreous ; tegulæ at tips and thorax mixed with reddish brown and black ; palpi black except at tips ; abdomen brownish ochreous, the ventral surface paler with some black irroration. Fore wing grey, with a violaceous tinge and slight black irroration; the costal area ochreous white to beyond middle ; a black streak in base of submedian fold expanding as a fascia to median nervure before middle; median nervure streaked with ochreous white ; a black fascia in cell from middle to extremity interrupted by the small, round, white orbicular stigma ; reniform small, with blackish centre and white annulus ; postmedial line represented by a series of black points on the veins, bent outwards below costa, excurved to vein 4, then oblique ; some fuscous suffusion in terminal parts of discal and submedian folds ; subterminal line represented by a series of small indistinct dentate marks ; a terminal series of small triangular black marks. Hind wing semihyaline white, with some dark points on termen ; the underside with the costal area tinged with ochreous and irrorated with black.

Hab. Brazil, Castro Paraña, type ♂ in Coll. Schaus. *Exp.* 30 millim.

*954. Lycophotia interrupta.

Agrotis interrupta, Mssn. Stübel's Reise, p. 144, pl. 6. f. 25 (1890).

♀. Head, thorax, and abdomen grey. Fore wing grey ; a black fascia below base of cell ; the ante- and postmedial lines obsolete ; the cell filled in with black before and between the stigmata, which are small, rounded, with black centres and outlines ; subterminal line only defined by a series of black points on its inner side and more prominent mark at costa. Hind wing white, the termen tinged with fuscous.

Hab. Ecuador, Guayaquil. *Exp.* 32 millim. This species is unknown to me ; type in Mus. Berlin, the structural characters examined by Prof. Karsch.

955. Lycophotia candelisequa.

Noctua candelisequa, Schiff. Wien. Verz. p. 72 (1776); Hübn. Vög. & Schm. pl. 55 ; id. Samml. Eur. Schmett., Noct. f. 397 ; Dup. Lép. Fr. vi. p. 72, pl. 77. f. 2 ; Herr.-Schäff. Schmett. Eur. ii. p. 332 ; Staud. Cat. Lep. pal. p. 143.
Noctua sagittifera, Hübn. Eur. Schmett., Noct. f. 532 (1827).
Agrotis rana, Led. Verh. zool.-bot. Ges. Wien, 1853, p. 367.

Head and thorax white tinged with pale brown ; palpi black, white at tips ; patagia with some black scales on their upper edge ;

tarsi banded with black; abdomen white, slightly tinged with pale brown. Fore wing white, irrorated with brown and tinged with pale brown in cell, discal and submedian folds, and on terminal area; the veins slightly streaked with black; a black streak in submedian fold from base to below origin of vein 2; the subbasal line indistinct, brownish, from costa to submedian fold, angled outwards below costa; the antemedial line indistinct, brownish, angled outwards below costa and above inner margin and incurved between those points, a black streak from it in cell to the subterminal line passing below the stigmata, which are white defined by black and the brown suffusion between them in cell; the orbicular small, round or elongate elliptical; the postmedial line diffused, brownish, excurved from costa to vein 4, then incurved; the subterminal line indistinct, dentate, defined by the area beyond it being tinged with brown and with dentate black marks on its inner side between veins 7 and 2; cilia greyish, intersected with red-brown. Hind wing pure white, the veins sometimes brownish towards termen; the underside with the costal area slightly irrorated with brown.

Ab. 1. *rana*. Paler; fore wing without black fasciæ or transverse lines.—Persia; C. Asia.

Hab. Alps of France, Switzerland and N. Italy, Frey & Leech Colls.; Austria, Zeller Coll.; Hungary; Armenia; Asia Minor, Pontus, Taurus; Persia; W. Turkestan, Fergana, Issyk-kul; W. Siberia, Altai; E. Turkestan, Ili. *Exp.* 44–46 millim.

956. Lycophotia muscosa.

Mentaxya muscosa, Geyer, Samml. Exot. Schmett. p. 10. 414, ff. 827, 828 (1837).
Eugraphe albifrons, Geyer, Samml. Exot. Schmett. p. 17. 430, ff. 859, 860 (1827).
Agrotis rimosa, Guen. Noct. i. p. 277 (1852).
Agrotis ignicollis, Wlk. xi. 740 (1857).
Agrotis amatura, Wlk. xv. 1700 (1858).
Diphtera cumulata, Wlk. xxxii. 613 (1865).
Agrotis varia, Wlk. xxxii. 694 (1865).
Dianthœcia æramen, Feld. Reis. Nov. pl. 109. f. 15 (1874).
Agrotis decipiens, Feld. Reis. Nov. pl. 110. f. 17 (1874).

Head white and pale brown; palpi except at tips and antennæ black; tegulæ green at base, with black medial line, rufous and blackish at tips; thorax rufous and blackish; tarsi banded with black; abdomen ochreous, dorsally suffused with fuscous, and with lateral, sublateral, and ventral series of small black spots. Fore wing sap-green irrorated with black; a waved subbasal black line from costa to submedian fold, defined by white on outer side and with two black spots before it; a white antemedial line angled outwards below costa and in submedian fold and inwards on median nervure and vein 1, the area between it and the subbasal line suffused with black except towards inner margin; claviform represented by a black point; orbicular and reniform whitish, irrorated with green and defined by black, the former elliptical, the latter often with brownish centre, a black bar between them; a dentate

white postmedial line strongly bent outwards below costa, excurved to vein 4, then incurved; an indistinct dentate whitish subterminal line, angled outwards at vein 7 and excurved at middle, with a quadrate black patch on costa before it. Hind wing semihyaline white, the costal area sometimes tinged with brown and some dark points on termen; the underside with the costal area irrorated with brown, a slight discoidal point and curved series of points on the veins.

Ab. 1. *albifrons*. Fore wing without the green tinge.

Ab. 2. *decipiens*. Thorax purple-brown, the tegulæ white with semicircular black patch, the metathoracic tuft white; fore wing with the quadrate antemedial, medial, and subterminal black patches on costa much more prominent.

Ab. 3. *amatura*. Thorax as in *decipiens* but black; fore wing with the ground-colour white instead of green, the costal patches very prominent, a white streak in base of cell.

Hab. Somaliland, Galla country (*Gillett*), 1 ♀; Br. E. Africa, Nairobi (*Crawshay*), 1 ♀, Kikuyu (*Crawshay*), 1 ♀, Eb Urru (*Betton*), 1 ♀; Transvaal (*Ross*), 1 ♀; Natal, Estcourt (*Hutchinson*), Durban (*Gooch*, *Leigh*), 2 ♂, 5 ♀, type *amatura*; Basutoland, Masite, 1 ♀, Khamalani (*Crawshay*), 1 ♀; C. Colony, Transkei (*Miss F. Barrett*), 2 ♂, 11 ♀, Knysna, Cape Town (*Smith*, *Gueinzius*, *Trimen*), 2 ♂, 5 ♀, types *varia* and *cumulata*; Madagascar, Betsileo (*Cowan*, *Cory*), 3 ♀. *Exp.* 36–42 millim.

957. Lycophotia bitriangula. (Plate LXXIV. fig. 28.)

Agrotis bitriangula, Hmpsn. Ann. S.-Afr. Mus. ii. p. 261 (1902).

Grey; palpi black except at tips; antennæ blackish; tegulæ black, edged with grey. Fore wing purplish grey, irrorated with a few black and red scales; an indistinct subbasal line from costa to submedian fold; an indistinct sinuous antemedial line bent outwards to inner margin; claviform represented by a black point at extremity; truncate triangular deep black spots in cell before the orbicular and reniform, which have whitish annuli and their centres defined by reddish, the former V-shaped, open above, the latter with black points on its outer edge and below it; an indistinct oblique waved line from lower angle of cell to inner margin; the postmedial line indistinct, double, minutely waved, bent outwards below costa, incurved at discal fold and below vein 4; a pale subterminal line slightly defined on each side by fuscous. Hind wing semihyaline white.

Hab. Cape Colony, Transkei (*Miss F. Barrett*), 1 ♂, 1 ♀ type. *Exp.* 36 millim.

958. Lycophotia isopleura. (Plate LXXIV. fig. 29.)

Agrotis isopleura, Hmpsn. Ann. S.-Afr. Mus. ii. p. 261 (1902).

♀. Grey mixed with brown; palpi black except at tips; tegulæ black at tips; abdomen brownish grey. Fore wing grey irrorated

with fuscous; the costal and terminal areas suffused with fuscous; a double, waved antemedial line; claviform represented by a black point; orbicular and reniform defined by black, the former somewhat quadrate, the latter constricted at middle, the cell between them deep black; a sinuous line from lower angle of cell to inner margin; the postmedial line double, minutely waved, bent outwards below costa, then oblique. Hind wing semihyaline white; the underside with the costal area tinged with fuscous.

Hab. Mashonaland, Salisbury (*Marshall*), 1 ♀ type. *Exp.* 30 millim.

959. **Lycophotia orthogramma,** n. sp. (Plate LXXIV. fig. 30.)

♂. Head and thorax brownish ochreous, irrorated with a few black scales; palpi black except at tips; a black bar above frons; tegulæ with black basal band; tarsi blackish; abdomen dark brown, the ventral surface whitish irrorated with black and with sublateral series of black spots. Fore wing with the apex produced and acute, the termen excurved below middle; whitish, thickly striated with olive-brown; the costal area suffused with olive-brown; a subbasal white line defined on each side by brown from costa to submedian fold; an oblique antemedial white line slightly defined by brown on inner side and strongly on outer; orbicular and reniform with white annuli defined by rufous, the former elliptical, inwardly oblique, the latter narrow with a black spot in its lower part; the postmedial line white, slightly defined by brown on inner side and strongly on outer, inwardly oblique from costa to vein 6, then erect; a terminal series of black points; cilia white at base, rufous at tips. Hind wing hyaline white, the costal and inner areas tinged with ochreous; the termen irrorated with black and with terminal series of black points; cilia ochreous white; the underside with the costal area irrorated with brown, a discoidal point, some postmedial points on the veins towards costa, and a terminal series.

Hab. Brazil, Petropolis (*Doer*), 1 ♂ type. *Exp.* 40 millim.

960. **Lycophotia ignicans.** (Plate LXXIV. fig. 31.)

Agrotis ignicans, Guen. Noct. i. p. 274 (1852); Druce, Biol. Centr.-Am., Het. i. p. 284.
Agrotis prodenoides, Wlk. x. 354 (1856).

Head and thorax pale ochreous, often slightly tinged with rufous and irrorated with a few dark scales; palpi black-brown and rufous, pale at tips; basal half of tegulæ black; fore coxæ and the tibiæ often tinged with pink; abdomen ochreous, tinged with rufous or fuscous, the anal tuft fulvous. Fore wing ochreous, irrorated and striated with black, especially on inner half, the terminal area only or wholly tinged with rufous; the subbasal line represented by slight striæ below costa and cell, the antemedial line by a black point on costa; claviform and orbicular obsolete; the reniform represented by a black point at upper angle of cell and two at lower angle on a rufous mark; the postmedial line reduced to a series of black points on the veins, strongly bent outwards below costa, then curved;

the subterminal line dark, defined by the area beyond it being rufous except at apex, slightly angled outwards at vein 7 and excurved at middle; the termen sometimes with some white points. Hind wing semihyaline white; the costal and inner areas and termen tinged with ochreous or fuscous; the underside with the costal area irrorated with fuscous.

Hab. Mexico, Jalapa (*Trujillo*), 3 ♂; Panama, Chiriqui (*Champion*), 1 ♀, Godman-Salvin Coll.; Venezuela, 1 ♂; Brazil, 1 ♂, Organ Mts., Tijvca (*Wagner*), 1 ♂; ? hab., 1 ♂ type *prodenoides*. *Exp.* 44 millim.

961. Lycophotia infecta.

Agrotis infecta, Ochs. Schmett. Eur. iv. p. 67 (1816).
Noctua præcox, Hübn. Samml. Eur. Schmett., Noct. f. 359 (1827), nec Linn.
Agrotis incivis, Guen. Noct. i. p. 274 (1852); Smith, Cat. Noct. N. Am. p. 70; Druce, Biol. Centr.-Amer., Het. i. p. 284.
Laphygma præcipua, Wlk. Char. Undescr. Het. p. 29 (1869).
Graphiphora bartholemica, Wllgrn. Œfv. Vet.-Akad. Förh. 1871, p. 915.
Anicla alabamæ, Grote, Bull. Buff. Soc. N. Sci. ii. p. 159 (1874).
Prodenia pauper, Butl. P. Z. S. 1878, p. 485.
Agrotis mulina, Möschl. Abh. Senck. Ges. xiv. (3) p. 47 (1886).
Anicla mahalpa, Schaus, J. N. Y. Ent. Soc. vi. p. 109 (1898).

Head and thorax grey, irrorated with a few dark scales; palpi black except at extremity; tegulæ with the basal half black; mid and hind tibiæ and tarsi suffused with black above; abdomen whitish tinged with brown, the anal tuft fulvous. Fore wing ochreous grey or violaceous grey, more or less strongly irrorated and striated with fuscous; the subbasal and antemedial lines usually represented by black points on the costa, sometimes traceable; claviform obsolete; orbicular and reniform small, grey with fulvous annuli, the former round, the latter with one black point in upper portion and two in lower; the postmedial line represented by a curved series of black points, sometimes connected by a minutely dentate line; the subterminal line pale, angled outwards at vein 7 and excurved at middle, with rufous or dark brown suffusion beyond it and often on its inner edge, leaving the apex grey. Hind wing semihyaline white, the costa and termen tinged with brown; the underside with the costal area irrorated with brown.

Hab. U.S.A., Massachusetts, Illinois, Alabama, 1 ♂ type *alabamæ*, Mississippi, Kansas, 1 ♂, 2 ♀, Texas, Dallas, 1 ♂, Washington, California, Florida, St. John's Bluff (*Doubleday*), 1 ♂, 3 ♀ type *incivis*; Bermuda, 'Challenger' Coll., 2 ♀; Jamaica (*Bowry*), 1 ♂ type *pauper*, Gordon Town (*Kaye*), 1 ♀; Haiti (*Tweedie*), 1 ♂; St. Lucia (*Maj. Cowie*), 2 ♀; Grenada (*H. H. Smith*), 2 ♀; Barbados (*Frampton*), 2 ♀; Mexico, Jalapa (*Trujillo*), 1 ♂, 2 ♀; Guatemala (*Rodriguez*), 1 ♂; Panama, Chiriqui (*Champion*), 1 ♂, Godman-Salvin Coll.; Venezuela, Caracas, 1 ♂; Brazil, São Paulo (*Jones*), 1 ♂, 1 ♀, Paraña, type † *mahalpa* in Coll. Schaus; Argentina, Goya (*Perrins*), 1 ♀; Peru, Lima, 1 ♀ type *præcipua*. *Exp.* 34–42 millim.

Larva. French, Can. Ent. xii. p. 14 (1880), as *lubricans*, in error; Dyar, Can. Ent. xxvi. p. 18 (1894).

Head pale green with brownish reticulations, curved vertical

band and line from eye. Body green, finely mottled with white, with faint, narrow, irregular dorsal, double subdorsal, lateral, and broad substigmatal white lines.

More usually the larva is brown. Head pale brown, the markings dark brown. Body pale brown, mottled with black, mostly in longitudinal streaks edging the whitish lines, which are dorsal, obscurely double subdorsal, and lateral, besides the broad distinct substigmatal band, white, sharply edged, red-centered. White subdorsal dots anteriorly on segments; spiracles white, black-rimmed. Subdorsal black shades longitudinal. Feeds on grass.—H. G. D.

962. Lycophotia biformis. (Plate LXXIV. fig. 32.)

Mentaxya biformis, Schaus, J. N. Y. Ent. Soc. vi. p. 109 (1898).

♂. Head and thorax grey-white, slightly pencilled with pale brown, the thorax irrorated with a few dark brown scales; palpi black-brown except at extremities; tegulæ with an elliptical black patch; legs tinged with blackish above; abdomen ochreous white, the ventral surface irrorated with black scales. Fore wing white, striated with rufous and irrorated with a few black scales; the subbasal line represented by blackish points below costa and cell; faint traces of a nearly straight antemedial line, with the black point representing the claviform on its outer edge; orbicular obsolete; reniform represented by two rufous points on discocellulars; an indistinct brownish postmedial line highly excurved beyond the cell; subterminal line obsolete; a terminal series of black points. Hind wing pure white.

Hab. Brazil, São Paulo (*Jones*), 2 ♂. *Exp.* 34 millim. Type † in Coll. Schaus.

963. Lycophotia messia. (Plate LXXV. fig. 2.)

Agrotis messium, Guen. Noct. i. p. 276 (1852).
Agrotis pesronii, Guen. Noct. i. p. 282 (1852).
Agrotis furcifera, Wlk. xv. 1699 (1858).
Cerastis ferruginescens, var. *lucilla*, Butl. Trans. Ent. Soc. 1882, p. 133.
Agrotis digramma, Mab. Bull. Soc. Philom. (7) ix. p. 60 (1885); id. N. Arch. Mus. (3) i. p. 146, pl. xi. f. 2.

Head grey, more or less strongly tinged with purplish red-brown; thorax grey, pencilled with brown, sometimes irrorated with black scales; tegulæ with the basal half black; tibiæ with the spurs black and white; abdomen greyish or ochreous, more or less strongly suffused and irrorated with brown. Fore wing grey, irrorated and sometimes suffused with dark brown, the costal area suffused with ferruginous or purple-brown; the subbasal line double, waved from costa to submedian fold; the antemedial line double, waved, bent outwards above inner margin; the claviform usually defined by black and well-developed, sometimes reduced to a point at its extremity; the orbicular and reniform small, defined by black, and with blackish centres, the former round; the postmedial line double, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved and slightly bent outwards above inner

margin; the subterminal line sometimes faintly defined by the area beyond it being brownish, angled outwards at vein 7 and excurved at middle; a series of black points just before termen. Hind wing semihyaline white; the veins, costa, and termen tinged with brown, some dark points on apical half of termen usually present; the underside with discoidal point, the costal area irrorated with brown.

Hab. Chile (*Edmonds*), 1 ♂, 4 ♀, type *lucilla*, Coquimbo (*J. J. Walker*), 2 ♀; Patagonia, Punta Arenas (*J. J. Walker*), 1 ♂; Straits of Magellan, type † ♂ *pesronii*, in Mus. Paris, Tierra del Fuego, type † *digramma*, in Mus. Paris; hab.? 1 ♀, type *furcifera*. *Exp.* 32–38 millim.

964. **Lycophotia melanobasis**, n. sp. (Plate LXXV. fig. 3.)

♂. Head and thorax grey and black; sides of frons with black spots; tegulæ with black medial band, the tips paler; abdomen grey suffused with fuscous brown. Fore wing grey suffused with fuscous and brown, and striated with dark brown; the subbasal line represented by black points below costa and cell; a broad diffused black band before the antemedial line, which is slightly angled outwards below costa and cell and strongly bent outwards above inner margin; claviform represented by a black point at its extremity; orbicular and reniform small, with grey annuli defined by black and black centres, the former round; traces of a medial shade from lower angle of cell to inner margin; the postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then oblique, the area beyond it suffused with black leaving the apex greyish; a terminal punctiform line. Hind wing white; the costal area and termen slightly irrorated with fuscous; the underside with discoidal point, postmedial series of points on the veins and some points on termen.

Hab. Uruguay, Colon (*O. Thomas*), 1 ♂ type. *Exp.* 34 millim.

965. **Lycophotia ferruginescens.** (Plate LXXV. fig. 4.)

Cerastis ferruginescens, Blanchard, Gay's Fauna Chile, vii. p. 83, pl. 6. f. 10 (1854).

♂. Head brownish; tegulæ black at base, pale at tips; thorax and abdomen ochreous white, slightly irrorated with dark brown. Fore wing ochreous white, sparsely irrorated with dark brown; a double, waved, subbasal line from costa to vein 1, a blackish patch on costal half of wing between it and the antemedial line, which is double, waved, and angled inwards on vein 1; the claviform represented by a minute black point at its extremity; orbicular and reniform small, obsoletely defined by black, the former round with black point at centre, the latter with black point in lower extremity; traces of a medial shade from lower angle of cell to inner margin; the postmedial line minutely waved, bent outwards below costa, excurved to vein 4, then incurved, and with a quadrate black patch on its outer edge at costa; a terminal series of black points. Hind

wing semihyaline white; the underside with slight discoidal point, and the costal area irrorated with brown.

♀. Hind wing irrorated with brown, especially towards termen.

Ab. 1. Thorax and fore wing very much browner, the latter without the black patches on costal area, which is sometimes slightly tinged with ferruginous; hind wing suffused with fuscous brown, becoming whitish towards base; the cilia white.

Hab. Chile, Valparaiso (*Edmonds*), 1 ♂, 3 ♀. *Exp.* 34 millim.

966. **Lycophotia minna.** (Plate LXXV. fig. 5.)

Cerastis minna, Butl. Trans. Ent. Soc. 1882, p. 134.
Orthosia mollis, Mab. Bull. Soc. Philom. (7) ix. p. 62 (1885); id. Miss. Sci. Cap Horn, vi. Lép. p. 18, pl. 1. f. 7.

♂. Head greyish mixed with pale rufous; palpi fringed with blackish in front; thorax ochreous tinged with pale rufous, the tegulæ with the basal half black; abdomen pale brownish irrorated with fuscous, and with some white hair at base. Fore wing pale brown, tinged with rufous and slightly irrorated with black; the subbasal and antemedial lines obsolete; a subbasal black point in cell; claviform represented by a black point, the orbicular by a small spot, the reniform by two spots conjoined by ferruginous and with traces of a pale annulus; traces of a punctiform postmedial line excurved from costa to vein 4, then incurved; a terminal series of black points. Hind wing semihyaline white; the costal area slightly irrorated with brown; a terminal series of black points except towards tornus; the underside with discoidal point.

Hab. Chile, Valparaiso (*Edmonds*), 1 ♂ type; Patagonia, Straits of Magellan, Beagle Channel, type † ♂ *mollis* in Mus. Paris. *Exp.* 34 millim.

967. **Lycophotia digna.** (Plate LXXV. fig. 6.)

Agrotis digna, Morr. Proc. Bost. Soc. N. H. xviii. p. 115 (1875); Smith, Cat. Noct. N. Am. p. 70.
Agrotis nigrovittata, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 77 (1875).

Head and thorax white, slightly tinged with ochreous; palpi black except at tips; tegulæ black at base; legs strongly irrorated with brown; abdomen white, tinged with ochreous except towards base. Fore wing ochreous white, slightly striated with grey and irrorated with dark brown especially towards termen; all the markings obsolete, except that the reniform is sometimes represented by two black points. Hind wing semihyaline white; the costal area and termen slightly tinged with ochreous in female.

Hab. U.S.A., Texas, 1 ♂, 1 ♀, type *nigrovittata*. *Exp.* 34 millim.

968. **Lycophotia atricincta.** (Plate LXXV. fig. 7.)

Noctua atricincta, Smith, Ent. News Philad. vi. p. 333, pl. xv. f. 3 (1895).

♂. Head and tegulæ white; palpi blackish at sides except at extremities; tegulæ with black medial band tapering to sides; thorax grey-white; tibiæ and tarsi tinged with fuscous; abdomen

white slightly tinged with brown. Fore wing white, slightly suffused with fuscous and irrorated with black; subbasal black points below costa and cell; the antemedial line represented by a blackish spot on costa and an obscure line from cell to inner margin angled inwards on vein 1; orbicular absent; the medial shade represented by a blackish spot on costa and curved line from cell to inner margin; reniform represented by a small black spot with short streak below it; the postmedial line dentate, black, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line grey, angled outwards at vein 7 and excurved at middle, defined by blackish spots on its inner side, becoming a stronger shade towards costa; the terminal area tinged with fuscous and with a terminal series of black points. Hind wing semihyaline white, slightly tinged with fuscous on costal and inner areas; the underside with the costal area slightly irrorated with fuscous and with diffused dark postmedial mark.

Hab. Canada, Calgary (*Wolley Dod*), 3 ♂; U.S.A., Dakota, Volga Co., 1 ♂. *Exp.* 36 millim.

*969. Lycophotia gaurax. (Plate LXXV. fig. 8.)

Agrotis gaurax, Püng. Iris, xiii. p. 117, pl. 4. f. 9 (1899); Staud. Cat. Lep. pal. p. 254.

♂. Head and thorax lilacine grey, the scales tipped with rufous; abdomen grey with a rufous tinge. Fore wing lilacine grey, the medial area suffused with rufous below the cell, the terminal area tinged with rufous; the subbasal line represented by an oblique black striga from costa; the antemedial line oblique, somewhat sinuous and indistinctly double, defined on outer side by a black bar from costa and a striga from median nervure; orbicular and reniform very large, with pale annuli, the former V-shaped, open above, the cell before and between them filled in with black; postmedial line indistinct or obsolescent except at costa, where it is represented by a black bar, dentate, and produced to points on the veins, bent outwards below costa, incurved at discal fold and below vein 4; the subterminal line indistinct, dentate, angled outwards at vein 7 and excurved at middle, defined by rufous on inner side. Hind wing pure white; the underside with the costal area irrorated with rufous and with indistinct postmedial line on it.

Hab. W. Turkestan, Alexander Mts., type † in Coll. Püngeler. *Exp.* 40 millim.

970. Lycophotia margaritacea.

Noctua margaritacea, Vill. Linn. Ent. ii. p. 272, pl. 5. f. 16 (1789); Herr.-Schäff. Schmett. Eur., Noct. p. 331; Staud. Cat. Lep. pal. p. 141.
Noctua glareosa, Treit. Schmett. Eur. v. 2, p. 247, nec Esp.
Noctua L-intactum, Hübn. Samml. Eur. Schmett., Noct. f. 130 (1827); Dup. Hist. Nat. Lép. Fr. vi. p. 75, pl. 77. ff. 3, 4.

Head and thorax white tinged with pale brown; palpi black at sides except at tips; neck black at sides; tegulæ with some dark scales; fore legs tinged with brown; abdomen white, the anal tuft

tinged with ochreous. Fore wing violaceous white, slightly tinged with ochreous towards termen and sparsely irrorated with black scales; the subbasal line represented by a small black spot on costa; an indistinct double, minutely waved antemedial line arising from a small black spot on costa; claviform represented by a black point at its extremity or absent; orbicular and reniform very faintly defined, the former round, a small quadrate black spot between them, sometimes placed on a faint brown medial shade which arises from a blackish spot on costa; the postmedial line very indistinct, dentate, and produced to points on the veins, arising from a black spot on costa, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale, defined by slight yellow-brown suffusion on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pure white, in female more or less tinged with brown on veins and terminal half.

Hab. France, Leech Coll.; Germany, Zeller Coll.; Austria; Hungary, Leech Coll.; Switzerland, Frey Coll.; Italy; Rumelia; Bythinia; Russia, 1 ♀; Armenia; Asia Minor, Pontus; Siberia (*Lederer*), 2 ♂, Altai; W. Turkestan, Issyk-kul; E. Turkestan, Ili. *Exp.* 40 millim.

971. Lycophotia insignata. (Plate LXXV. fig. 9.)

Graphiphora insignata, Led. Verh. zool.-bot. Ges. Wien, 1853, p. 366, pl. 4. f. 2; Staud. Cat. Lep. pal. p. 139.
Noctua intermedia, Ev. Bull. Mosc. iv. p. 421 (1855).
Agrotis pallescens, Christ. Iris, vi. p. 90 (1893).

Head and thorax pale brown mixed with grey and irrorated with a few black scales; palpi blackish, white at tips; abdomen ochreous white. Fore wing pale brownish grey, irrorated with a few black scales; a slightly curved black subbasal line from costa to submedian fold; the antemedial line pale, defined by black on outer side from costa to vein 1, angled outwards on subcostal and median nervures and bent outwards above inner margin; claviform, orbicular, and reniform with grey brown-edged centres, and whitish annuli defined by brown, the former rather small, the two latter very large, the orbicular oblique rounded; an indistinct waved medial shade from cell to inner margin; the postmedial line pale, slightly defined by brown and with some black points on its inner side towards costa, slightly bent outwards below costa, excurved to vein 4, then incurved; subterminal line pale, defined by black suffusion on inner side, angled outwards at vein 7 and slightly dentate at veins 4, 3, 2; a terminal series of black points. Hind wing pure white, with fine brown terminal line; underside with the costal area irrorated with pale brown.

Ab. 1. *pallescens*. Fore wing with the markings very indistinct. —Persia; Turcomania.

Hab. S. Russia, Sarepta; Persia; W. Siberia, Altai, 3 ♂, 3 ♀, Zeller Coll.; W. Turkestan, Turcomania, Issyk-kul. E. Turkestan, Ili. *Exp.* 42–44 millim.

972. Lycophotia butleri. (Plate LXXV. fig. 10.)

Mentaxya butleri, Schaus, Journ. N. Y. Ent. Soc. vi. p. 108 (1898).

♀. Head and thorax grey pencilled with brown; palpi black except at tips; abdomen grey irrorated with brown. Fore wing pale grey, slightly irrorated with black and tinged in parts with brown; the subbasal line represented by black spots on costa and below the cell; the antemedial line double, brown, slightly excurved below cell and strongly above inner margin; claviform small, slightly defined by black; orbicular and reniform small, defined by black and with brownish centres; traces of a waved medial shade; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line diffused reddish brown, developed into a patch on costa, angled outwards at vein 7 and excurved at middle; a series of black points just before termen. Hind wing semihyaline white, the costal area irrorated with brown; the veins towards termen brown; a brown terminal line except towards tornus.

Hab. Mexico, Jalapa, type † ♀ in Coll. Schaus; Brazil, Rio Janeiro, 1 ♀. *Exp.* 34 millim.

*973. Lycophotia yaxcaba. (Plate LXXV. fig. 11.)

Amathes yaxcaba, Schaus, Journ. N. Y. Ent. Soc. vi. p. 108 (1898).

♀. Head and thorax fuscous, the scales tipped with grey; palpi black, pale at tips; abdomen pale, dorsally tinged with brown, the ventral surface irrorated with brown. Fore wing thickly irrorated with black; a slightly waved black subbasal line from costa to submedian fold; a somewhat dentate antemedial line oblique from costa to submedian fold, then incurved; claviform and orbicular obsolete; reniform only defined by a slightly curved black striga below it; postmedial line minutely dentate, somewhat diffused, oblique from costa to vein 4 where it is angled, then erect; no trace of subterminal line; a terminal series of black points. Hind wing hyaline white, the veins brownish; a slight terminal brown line; the underside with the costal area irrorated with black.

Hab. Mexico, Orizaba, type † ♀ in Coll. Schaus. *Exp.* 36 millim.

974. Lycophotia simplicia. (Plate LXXV. fig. 12.)

Agrotis simplicius, Morr. Proc. Bost. Soc. N. H. xvii. p. 164 (1874).
Agrotis simplaria, Morr. Proc. Bost. Soc. N. H. xvii. p. 210 (1874); Smith, Cat. Noct. N. Am. p. 70.

♂. Head and thorax grey irrorated with dark brown; palpi black except at tips; tegulæ with traces of a black medial line; pectus and legs strongly irrorated with black; abdomen grey, the dorsal surface irrorated with brown, the ventral strongly with black. Fore wing grey-white, irrorated with black; the lines obsolete; the claviform represented by parallel short streaks; the orbicular by a short streak above median nervure, sometimes conjoined to the reniform, which consists of black points on each side

of a whitish lunule; a terminal series of black points. Hind wing semihyaline white; the costal area irrorated with fuscous; some dark striæ on termen.

♀. Hind wing with the termen irrorated with fuscous.

Hab. U.S.A., Texas, 1 ♂, 1 ♀. *Exp.* 34 millim.

975. Lycophotia aspersa. (Plate LXXV. fig. 13.)

Spodoptera aspersa, Butl. Trans. Ent. Soc. 1882, p. 117.

♂. Head and thorax pale brown mixed with grey; palpi blackish at sides except towards tips; tegulæ with blackish medial line; abdomen ochreous white irrorated with fuscous, the anal tuft ochreous. Fore wing pale brown irrorated with fuscous; no trace of the ante- and postmedial lines; orbicular and reniform very obscurely defined by fuscous, the former round; the subterminal line represented by a greyish bar from costa, then by an indistinct series of small ochreous and blackish dentate marks; a slight terminal series of black points. Hind wing pure white; the underside with the costal area irrorated with dark brown, some black points on termen towards apex.

Hab. Chile (*Edmonds*), 1 ♂ type. *Exp.* 32 millim.

976. Lycophotia diana. (Plate LXXV. fig. 14.)

Ochropleura diana, Butl. Trans. Ent. Soc. 1882, p. 132.

♂. Head and tegulæ red-brown strongly mixed with grey; palpi blackish except at tips; the extremity of tegulæ and thorax red-brown, the scales tipped with grey; pectus and legs rufous and grey; abdomen whitish tinged with ochreous, the ventral surface irrorated with rufous and black. Fore wing red-brown irrorated slightly with black; the basal area, costal area to beyond middle, and veins suffused with grey; the subbasal line represented by rufous striæ from costa and median nervure; antemedial line indistinct, oblique, somewhat waved; orbicular a small black spot with ochreous annulus; reniform an ochreous white lunule; the postmedial line indistinct, minutely waved, bent outwards below costa, excurved to vein 4, then incurved; a terminal series of blackish points. Hind wing semihyaline white, with some dark points on costal half of termen; the underside with the costal area irrorated with some large black scales, a small discoidal spot.

Hab. Chile (*Edmonds*), 1 ♂ type. *Exp.* 32 millim.

977. Lycophotia atrisparsa, n. sp. (Plate LXXV. fig. 15.)

♂. Head and tegulæ pale brownish, slightly mixed with black; palpi black except at tips; antennæ black; thorax blackish mixed with rufous; abdomen pale fuscous, the anal tuft and ventral surface ochreous. Fore wing ochreous whitish, tinged with purplish red especially towards costa and sparsely irrorated and striated with black; some black patches on costa; a pale waved subbasal line from costa to submedian fold; an indistinct waved

antemedial line with black points at the veins on its inner side; orbicular extremely indistinct; reniform indistinctly defined by blackish and with a blackish bar before it; the postmedial line bent outwards below costa, then indistinct, dentate, and produced to points on the veins; some pale points on costa towards apex and a black patch before the very indistinct subterminal line; a terminal series of black points; cilia blackish, with a pale line through them. Hind wing semihyaline white; the costal area tinged with fuscous towards apex, some dark strigæ on termen; the underside with the costal area irrorated with brown; a dark discoidal point and three postmedial points on the veins towards costa.

Hab. Br. E. Africa, Machakos (*Crawshay*), 1 ♂ type. *Exp.* 32 millim.

978. **Lycophotia perirrorata.** (Plate LXXV. fig. 16.)

Agrotis perirrorata, Hmpsn. Ann. S. Afr. Mus. ii. p. 262 (1902).

Head and thorax pale ochreous mixed with black; palpi blackish at sides; tarsi blackish with pale rings; abdomen ochreous irrorated with fuscous, the anal tuft with a fulvous tinge. Fore wing ochreous grey, very thickly irrorated with black; the costa with some blackish patches; traces of a pale waved subbasal line from costa to submedian fold; an indistinct waved dark antemedial line; claviform represented by a black point at its extremity; orbicular and reniform blackish with grey annuli defined by black, the former rather small, round; the postmedial line bent outwards below costa, then represented by points on the veins, excurved to vein 4, then oblique; some pale points on costa towards apex; the subterminal line only defined by blackish patches on its inner side at costa and middle; a terminal series of black points; cilia ochreous and black. Hind wing semihyaline ochreous white, the costal area slightly irrorated with fuscous; a terminal series of black points; the underside with the costal area irrorated with fuscous, a discoidal point.

Hab. Natal, Estcourt (*Hutchinson*), 1 ♂ type; C. Colony, Transkei (*Miss F. Barrett*), 2 ♀. *Exp.* 34 millim.

979. **Lycophotia fuscirufa**, n. sp. (Plate LXXV. fig. 17.)

♂. Head and tegulæ ochreous and rufous, the latter with black medial line and tips; thorax rufous suffused with fuscous; tarsi ringed with ochreous. Fore wing rufous suffused with fuscous black except on inner area and between the postmedial and subterminal lines from below costa; an indistinct, waved, black subbasal line from costa to submedian fold; an oblique waved antemedial line; the orbicular and reniform with obscure rufous annuli defined by black, the former round, a black streak in cell before and between the stigmata; the postmedial line double, minutely waved, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line defined by the area beyond it being dark, angled outwards at vein 7 and excurved at middle;

a terminal series of black points; cilia rufous, with a dark line through them. Hind wing yellowish white, the costal area tinged with fuscous; the underside with the costal area irrorated with fuscous, a discoidal point and curved postmedial series.

♀. Hind wing with the terminal area suffused with fuscous from costa to vein 2.

Hab. Br. E. Africa, Kikuyu (*Crawshay*), 2 ♂, 1 ♀, type. *Exp.* 30 millim.

*980. Lycophotia funebris. (Plate LXXVII. fig. 32.)

Fagitana funebris, Schaus, Trans. Am. Ent. Soc. xxi. p. 236 (1894).

♀. Head and thorax black-brown, some of the hairs tipped with white; fore tibiæ above and tarsi ochreous; abdomen ochreous, the ventral surface blackish. Fore wing black-brown irrorated with white, the base of inner margin ochreous; a black discoidal lunule; an indistinct curved postmedial series of black points on the veins; a terminal series of slight black marks. Hind wing yellowish white, the veins and terminal area tinged with fuscous; a terminal series of dark striæ from apex to vein 2; the underside with the costal area suffused and irrorated with dark brown, a postmedial series of slight streaks on the veins.

Hab. Brazil, Castro Paraña, type † ♀ in Coll. Schaus. *Exp.* 42 millim.

*981. Lycophotia sordescens. (Plate LXXV. fig. 18.)

Agrotis sordescens, Staud. Iris, xii. p. 360 (1899); id. Cat. Lep. pal. p. 141.

♂. Head and thorax grey mixed with dark brown and reddish brown; palpi blackish at sides except at tips; tegulæ with blackish medial line with some dark brown before it; abdomen brownish grey. Fore wing pale fuscous with a purplish tinge, suffused and irrorated with grey; a subbasal black line from costa to submedian fold angled inwards below median nervure; a strong antemedial black line, oblique towards costa and angled inwards on vein 1; traces of a greyish claviform; orbicular and reniform with grey annuli very incompletely defined by brown, the former round, a triangular black patch in cell between them, with a black spot above it on costa; traces of a medial shade; postmedial line marked by a black spot at costa, then indistinct, bent outwards below costa, excurved to vein 4, then incurved, some white points beyond it on costa; an indistinct dark subterminal line angled outwards at vein 7 and excurved at middle; traces of a terminal series of points; a fine pale line at base of cilia. Hind wing white; the veins and terminal area tinged with brown; the underside with the costal area irrorated with brown.

Hab. W. Turkestan, Sarawschan in Coll. Püngeler. *Exp.* 36 millim.

*982. Lycophotia tenuescens. (Plate LXXV. fig. 19.)

Peridroma tenuescens, Smith, Bull. U. S. Nat. Mus. 38, p. 73 (1890); id. Cat. Noct. N. Am. p. 70.

Head and thorax whitish, with a few scattered reddish and black scales. Fore wing whitish, the terminal area suffused with reddish; the lines obsolete; claviform and orbicular obsolete; reniform blackish, ill-defined. Hind wing greyish or fuscous, paler at base; the underside pale grey, irrorated with blackish.

Hab. U.S.A., Nebraska. *Exp.* 31 millim. This species is unknown to me; figured from a drawing from type in Brooklyn Inst. Arts & Sci.

983. Lycophotia conchidia. (Plate LXXV. fig. 20.)

Hadena conchidia, Butl. Trans. Ent. Soc. 1882, p. 135.

♂. Head grey, with rufous bars above frons and between antennæ; tegulæ yellow-brown at base, their tips and the thorax grey mixed with black and brown and the scales tipped with white; abdomen whitish, irrorated with brown, tinged with ochreous towards extremity. Fore wing grey, tinged with brown and irrorated with black; the veins streaked with white; a double black subbasal curved line from costa to submedian fold, interrupted at cell and with black mark beyond it below the cell; an indistinct double, waved, antemedial line strongly angled inwards on vein 1 and outwards above inner margin; claviform faintly defined by black; orbicular and reniform defined by black and with blackish centres, the former round, the latter with some rufous in its outer part; postmedial line rather indistinct, dentate, bent outwards below costa, excurved to vein 4, then oblique; subterminal line represented by a very indistinct series of dentate marks; a terminal series of black points. Hind wing hyaline white, the termen suffused with fuscous brown, narrowing to a point at vein 1; the underside with the costal area irrorated with black, a terminal series of black points.

♀. Head and thorax grey irrorated with black; hind wing with the marginal areas suffused with fuscous.

Hab. Chile (*Edmonds*), 1 ♂, 1 ♀ type, Coquimbo (*J. J. Walker*), 1 ♂, 1 ♀. *Exp.* 34 millim.

984. Lycophotia differens. (Plate LXXV. fig. 21.)

Agrotis differens, Wlk. x. 336 (1856).

♂. Head and front of thorax purple-brown, metathorax grey-brown, the scales tipped with grey; pectus, legs, and abdomen grey-brown, the anal tuft tinged with rufous. Fore wing dull brown, slightly suffused with purplish red; traces of double, waved, subbasal and antemedial lines; claviform short, faintly defined by red-brown; orbicular and reniform obscurely defined by red-brown, the former round; some pale points on costa towards apex; the subterminal line represented by some very faint dark points; a terminal series of black points. Hind wing white, the

veins, costal and terminal areas suffused with brown; cilia with brown line at base; the underside with the costal area irrorated with brown.

Hab. Venezuela (*Dyson*), 1 ♂. *Exp.* 40 millim.

*985. Lycophotia exuberans. (Plate LXXV. fig. 22.)

Noctua exuberans, Smith, J. N. Y. Ent. Soc. vi. p. 103 (1898).

Grey varying from reddish to ashen and with more or less dark irroration; palpi deep brown at sides; tegulæ deep brown at base. Fore wing with the ante- and postmedial lines represented by black spots on costa, the antemedial line sometimes faintly traceable; claviform and orbicular obsolete; reniform small, black, ill-defined and incomplete above; a slight medial shade; subterminal line faint, pale, defined on inner side by a slight dark shade on costal area, the area beyond it somewhat darker. Hind wing iridescent white, tinged with fuscous towards termen; a dark terminal line; cilia white; the underside with the marginal areas slightly irrorated with fuscous.

Hab. U.S.A., Colorado, Glenwood Springs. *Exp.* 40 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

986. Lycophotia postventa. (Plate LXXV. fig. 23.)

Eurois postventa, Geyer, Samml. Exot. Schmett. iii. ff. 865, 866 (1837).

♀. Head and thorax grey; frons blackish; thorax tinged with black; abdomen fuscous black above, greyish below, the anal tuft ochreous. Fore wing lilacine grey irrorated with black-brown; orbicular and reniform with blackish centres and grey annuli defined by black, the former round, the latter with some grey in centre, a blackish patch between the stigmata extending to costa; traces of an oblique double line from lower angle of cell to inner margin; the postmedial line represented by a series of black points on the veins, strongly bent outwards below costa, excurved to vein 4, then oblique; a terminal series of black points. Hind wing white, the veins, inner and terminal areas tinged with brown; a terminal series of dark striæ; the underside with the costal area irrorated with brown, a dark discoidal spot and postmedial series of points on the veins.

Hab. Namaqualand; C. Colony, 1 ♀. *Exp.* 50 millim.

987. Lycophotia costigera. (Plate LXXV. fig. 24.)

Agrotis costigera, Wlk. xv. 1702 (1858).

♂. Head and thorax grey mixed with fuscous brown; tegulæ with slight blackish medial line; abdomen whitish, dorsally tinged with ochreous towards extremity, ventrally irrorated with brown. Fore wing grey suffused with pale reddish brown and irrorated with dark brown; the costal edge white to beyond middle, with four dark marks on it at origin of lines; faint traces of a waved antemedial line; reniform small, greyish, incompletely defined by black; the postmedial line very indistinct, waved, bent outwards

below costa, excurved to vein 4, then incurved; some white points on costa towards apex. Hind wing whitish suffused with pale ochreous brown; the underside with the costal area irrorated with brown.

Hab. Chile (*Cuming*), 1 ♂. *Exp.* 42 millim.

988. Lycophotia lubricans. (Plate LXXV. fig. 25.)

Noctua lubricans, Guen. Noct. i. p. 323 (1852); Smith, Cat. Noct. N. Am. p. 77.
Graphiphora illapsa, Wlk. xi. 744 (1857).
Mamestra associans, Wlk. xv. 1683 (1858).
Agrotis beata, Grote, A. M. N. H. (5) xi. p. 54 (1883).

Head and thorax grey mixed with fuscous; palpi black except at tips; tegulæ with black medial line; legs grey and black; abdomen brownish grey, the anal tuft rufous. Fore wing reddish brown, slightly suffused with grey and irrorated with black, the costal area grey with the lines represented by oblique black bars, then obsolescent; the subbasal line obsolete except on costal area; the antemedial line slightly angled outwards below costa and excurved below cell; the medial line excurved at median nervure; the reniform small, grey, defined by black, which may be reduced to lines or points; the postmedial line excurved below costa, angled outwards at vein 4, then incurved; the subterminal line whitish, more or less reduced to points especially towards costa, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing white tinged with brown, especially on costal and terminal areas; the underside whiter, the costal area irrorated with brown and tinged with red, a dark discal spot.—Florida.

The form *illapsa* from Canada and the Eastern States has the ground-colour of fore wing much greyer, the lines more distinct, and reddish brown or fiery red suffusion before the subterminal line.

The form *beata* from the Western States has the suffusion before the subterminal line black-brown.

Hab. Canada, Hudson's Bay, 1 ♀ type *illapsa*; U.S.A., Eastern States, 2 ♂, 1 ♀, Florida, 2 ♂ (*Doubleday*), type and type *associans*, Texas, Colorado, New Mexico. *Exp.* 38–42 millim.

989. Lycophotia pulverea, n. sp. (Plate LXXVIII. fig. 7.)

Head and thorax pale brownish grey; palpi black except at tips; abdomen whitish, dorsally tinged with brown, ventrally irrorated with dark brown. Fore wing pale grey-brown, with a reddish tinge thickly irrorated with fuscous; an indistinct curved blackish subbasal line from costa to submedian fold; a very indistinct waved antemedial line; orbicular and reniform with pale ochreous annuli, the former rounded, the latter rather constricted at middle and with slight fuscous tinge in lower part; postmedial line even, bent outwards below costa and incurved below vein 4, with a series of black points beyond it from vein 6 to inner margin; subterminal line pale, narrowly defined by fuscous on inner side, slightly angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules and a fine ochreous line at base of cilia. Hind wing white,

the veins and terminal area suffused with brown, more uniformly suffused in female; the cilia white; the underside with the costal area irrorated with brown, a curved postmedial line.

Hab. Cyprus, Mts. (*Miss D. M. A. Bate*), 1 ♂, 1 ♀ type. *Exp.* 32–36 millim.

990. Lycophotia pudens. (Plate LXXV. fig. 26.)

Agrotis pudens, Mab. Ann. Soc. Ent. Fr. lxviii. p. 728 (1900).

♀. Head and thorax lilacine grey slightly tinged with rufous; palpi black at sides except at tips; tegulæ with black medial line; tarsi blackish with pale rings; abdomen dorsally ochreous brown tinged with fuscous, the ventral surface whitish, with black sublateral points. Fore wing lilacine grey slightly irrorated with black, the costal area tinged with ferruginous red; a double rufous subbasal line from costa to submedian fold; a double antemedial line angled outwards in cell and above inner margin; claviform represented by a rufous striga at its extremity; orbicular and reniform with pale fuscous centres and pale annuli defined by rufous; the postmedial line double, bent outwards below costa, excurved to vein 4, then oblique, with a series of black points on its outer edges and a series on the veins beyond it; the subterminal line whitish, angled outwards at vein 7 and excurved at middle, with a rufous patch on its inner side at costa, then a series of points and slight rufous marks on its outer edge; a terminal series of black points; cilia pale brown. Hind wing semihyaline white, the veins, costal and inner areas and a terminal line brownish; the underside with the costal area irrorated with brown, postmedial and subterminal series of black points.

The type from E. Africa has the lower part of cell before and between the stigmata black, the area above and beyond it redder.

Hab. Madagascar, Betsileo (*Cowan*), 1 ♀; E. Africa, type † ♀ in Coll. Mabille. *Exp.* 42 millim.

991. Lycophotia conformis.

Agrotis conformis, Swinh. Trans. Ent. Soc. 1885, p. 349, pl. 9. f. 5; Hmpsn. Moths Ind. ii. p. 184.

♂. Head and thorax whitish irrorated with pale ochreous brown; abdomen pale ochreous brown. Fore wing pale ochreous brown slightly irrorated with dark scales; the ante- and postmedial lines represented by black points on costa; orbicular and reniform large, defined by ochreous annuli, the former oblique, elliptical. Hind wing whitish, the veins, inner and terminal areas tinged with ochreous.

Hab. Baluchistan, Quetta (*Swinhoe*), 1 ♂ type. *Exp.* 38 millim.

992. Lycophotia vallesiaca.

Agrotis vallesiaca, Boisd. Ic. pl. 78. f. 3 (1832); Staud. Iris, i. p. 217, pl. 10. f. 10; Herr.-Schäff. Schmett. Eur. ii. p. 334, Noct. f. 80; Staud. Cat. Lep. pal. p. 146.

Head and thorax ochreous white mixed with brown and a few

black scales; tarsi banded with black. Fore wing pale ochreous thickly irrorated with brown; a waved subbasal dark line from costa to submedian fold; an obliquely waved antemedial line; claviform slightly defined at extremity by blackish; orbicular and reniform slightly defined by blackish, the former small, round; a waved medial line oblique from costa to lower angle of cell; postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved and angled outwards on vein 1; subterminal line pale, defined by fuscous suffusion on inner side, angled outwards at vein 7 and dentate at veins 3, 4; a terminal series of small dark lunules. Hind wing white, the terminal area tinged with brown; the underside with the costal area slightly irrorated with brown.

Hab. Switzerland, Valais, 1 ♂, 1 ♀. *Exp.* 40 millim.

993. Lycophotia pœcila.

Agrotis pœcila, Alph. Stett. ent. Zeit. 1888, p. 67; id. Rom. Mém. vi. p. 27, pl. 2. f. 4; Staud. Cat. Lep. pal. p. 144.
Agrotis superba, Staud. Stett. ent. Zeit. 1889, p. 32.

Head and thorax pale rufous mixed with fuscous and grey-white; tegulæ blackish at base, with black medial line and white tips; abdomen white tinged with pale brown. Fore wing pale ochreous irrorated with black, the veins and costal area to subterminal line white irrorated with black; a double, waved, subbasal black line filled in with white from costa to submedian fold; a double, waved, antemedial line angled inwards on median nervure and vein 1; claviform very faintly defined by black scales and with a pale streak from it to postmedial line; orbicular and reniform whitish, the former produced to a point on outer side, the latter with fuscous mark on its lower part; the postmedial line defined by whitish on outer side, highly dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4 and incurved in submedian interspace; subterminal line indistinct, whitish, defined by a series of diffused dentate marks on inner side, angled outwards at vein 7 and dentate at veins 4 and 3; a terminal series of small black lunules; cilia white, with fuscous line at base. Hind wing ochreous white, tinged with fuscous especially on terminal area; the cilia white; the underside white, the costal and terminal areas irrorated with fuscous, a slight discoidal spot, traces of a curved postmedial line and terminal series of black striæ.

Hab. E. Turkestan, Kashgar; Mongolia, Uliassutai, 1 ♂, 1 ♀. *Exp.* 48 millim.

994. Lycophotia fugax.

Noctua fugax, Treit. Schmett. Eur. v. i. p. 195 (1825); Boisd. Icones, pl. 80. f. 3; Dup. Lép. Fr. vi. pl. 73. f. 4; Herr.-Schäff. Schmett. Eur., Noct. f. 170; Staud. Cat. Lep. pal. p. 144.
Agrotis ala, Staud. Stett. ent. Zeit. 1881, p. 413; id. Cat. Lep. pal. p. 144.

Head and thorax grey mixed with dark brown; pectus with the hair whitish; tarsi black with pale rings. Fore wing grey thickly

irrorated with dark brown; a double, waved, subbasal line from costa to submedian fold; a double, highly waved, antemedial line; a waved medial shade angled outwards on median nervure; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved, defined by ochreous on outer side; the subterminal line defined by dark brown suffusion on inner side, dentate, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing ochreous white tinged with brown especially on terminal area; the veins brown; the cilia white; the underside white irrorated with brown on costal and terminal areas, a dark discoidal spot and curved postmedial line with darker striæ at the veins, a terminal series of dark points.

Ab. 1. *ala.* Fore wing with the orbicular and reniform stigmata defined by ochreous-white annuli, the former round.

Hab. Austria; Hungary, Zeller & Frey Colls.; Russia, Centr. & S.E.; Armenia; W. Turkestan, Ferghana, Sarawschan, Ala Tau, Issyk-kul, Alexander Mts., 1 ♂, 1 ♀; E. Turkestan, Ili. *Exp.* 44–56 millim.

995. Lycophotia photophila.

Agrotis photophila, Guen. Noct. i. p. 302 (1852); Staud. Cat. Lep. pal. p. 144.
Agrotis sollers, Staud. Stett. ent. Zeit. 1877, p. 179; Christ. Hor. Soc. Ent. Ross. xii. pl. 6. f. 19; Staud. Cat. Lep. pal. p. 144.
Agrotis ignipeta, Oberth. Et. Ent. i. p. 45, pl. 4. f. 4 (1876).
Spælotis undulans, Moore, A. M. N. H. (5) i. p. 233 (1878); id. 2nd Yarkand Mission, pl. 1. f. 10; Hmpsn. Moths Ind. ii. p. 183.
Agrotis obscurior, Staud. Stett. ent. Zeit. 1889, p. 27.
Agrotis candida, Staud. Stett. ent. Zeit. 1889, p. 27.
Agrotis obumbrata, Staud. Stett. ent. Zeit. 1889, p. 27.

Head and thorax fuscous brown mixed with grey; tarsi ringed with fuscous; abdomen white dorsally tinged with fuscous. Fore wing grey, thickly irrorated with fuscous brown; a waved subbasal line from costa to submedian fold; a waved, somewhat oblique antemedial line with a pale line on its inner side; orbicular a dark point; a waved medial shade excurved at lower angle of cell; reniform a slight dark lunule; postmedial line fuscous with pale outer edge, dentate, bent outwards below costa, slightly angled inwards in discal fold and incurved below vein 4; subterminal line indistinct, dentate, defined by fuscous suffusion on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing and underside white suffused with fuscous.

Ab. 1. *vestilina*, Püng. ined. Like *candida*, but with the hind wing almost entirely white.—Aksu.

Ab. 2. *candida.* Paler; the ground-colour whitish or ochreous; hind wing whiter, the veins and terminal area tinged with ochreous.—Issyk-kul.

Ab. 3. *obscurior.* Darker, especially the hind wing and underside.—Samarkand.

Ab. 4. *obumbrata.* Much darker; fore wing very thickly irrorated with fuscous; orbicular and reniform often more developed and defined by ochreous; hind wing fuscous brown, the inner area with a rufous tinge, the cilia white; the underside white irrorated with fuscous, discoidal points and a curved postmedial line.—Issyk-kul.

Hab. Algeria; Syria, 2 ♀; E. Turkestan, Yarkand; S. Afghanistan; Scinde, Karachi (*Swinhoe*), 1 ♀; W. Turkestan, Turkomania, 1 ♂, 1 ♀, Samarkand (*Haberhauer*), 2 ♀, Issyk-kul, 6 ♂, 4 ♀; Mongolia, Aksu. *Exp.* 56 millim.

*996. Lycophotia electra. (Plate LXXV. fig. 27.)

Agrotis electra, Staud. Stett. ent. Zeit. 1888, p. 6; id. Cat. Lep. pal. p. 145.

Head and thorax grey-white, the hairs tipped with fuscous; palpi blackish at sides; tarsi blackish with pale rings; abdomen grey-white. Fore wing grey-white, thickly and finely irrorated with fuscous; subbasal line obsolescent, double, waved from costa to submedian fold; antemedial line oblique, double, waved, indistinct but with prominent black point at costa; stigmata obsolete; an indistinct medial shade angled at lower angle of cell; postmedial line minutely dentate and produced to points on the veins, with a distinct black point at costa, bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by a very indistinct series of dentate marks; a waved brown terminal line; cilia grey, with a brown line through them. Hind wing white, slightly but nearly uniformly tinged with fuscous; cilia pure white; the underside white, the costal area irrorated with brown and with a postmedial line crossing it, a slight discoidal point.

Hab. W. Turkestan, Ferghana, Tagus-torau in Coll. Püngeler. *Exp.* 36 millim.

997. Lycophotia caradrinoides.

Agrotis caradrinoides, Staud. Iris, ix. pp. 248, 368, pl. 4. f. 4 (1896); id. Cat. Lep. pal. p. 145.
Agrotis hydrilloides, Alph. Rom. Mém. ix. p. 203, pl. 13. f. 11 (1897).

♂. Head and thorax pale brown mixed with dark brown; tarsi banded with black. Fore wing pale greyish-brown thickly irrorated with black; the subbasal and antemedial lines ill-defined double, waved, the former from costa to submedian fold; claviform represented by some blackish scales; orbicular and reniform represented by indistinct pale lunules slightly defined by black; the postmedial line indistinct, dentate, bent outwards below costa, excurved to vein 4, then incurved; a terminal series of black points. Hind wing whitish tinged with brown; the underside whiter, the costal area irrorated with brown, a slight discoidal spot and curved postmedial line.

Hab. Russia, Urals; Mongolia, Uliassutai Mts., 1 ♂, Changai Mts. *Exp.* 34 millim.

998. Lycophotia hadjina. (Plate LXXV. fig. 28.)

Agrotis hadjina, Staud. Iris, iv. p. 270, pl. iii. f. 8 (1891); id. Cat. Lep. pal. p. 145.
Agrotis zeituna, Staud. Iris, xii. p. 361, pl. 6. f. 6 (1899).

Head and thorax pale blue-grey mixed with black; palpi blackish at sides; tarsi banded with black; abdomen ochreous grey irrorated with brown. Fore wing blue-grey thickly irrorated with black; a waved subbasal line from costa to submedian fold arising from a black spot on costa; a waved antemedial line arising from a black spot on costa; an ochreous streak in submedian fold, the claviform being represented by its extremity being slightly defined by black; orbicular and reniform ochreous defined by blackish, the former small, round; postmedial line rather indistinct, dentate, slightly incurved in discal fold and more strongly below vein 4; the subterminal line ochreous, defined by darker suffusion on inner side, somewhat dentate, angled outwards at vein 7 and excurved at middle; an ochreous line at base of cilia. Hind wing dark fuscous; the cilia whitish, ochreous at base; the underside ochreous white, slightly irrorated with brown, the terminal area suffused with brown.

Ab. 1. *zeituna*. Paler and without the blue-grey, the ground-colour of head, thorax, and fore wing being ochreous grey.

Hab. Asia Minor, 2 ♂, 1 ♀; Syria, 3 ♂, 2 ♀. *Exp.* 36–42 millim.

*999. Lycophotia macrina. (Plate LXXVIII. fig. 8.)

Agrotis macrina, Püng. ined.

Head whitish, palpi at sides except extremity and antennæ blackish; thorax grey mixed with fuscous; tarsi banded with black; abdomen greyish white, the anal tuft tinged with ochreous. Fore wing grey, suffused with olive and thickly irrorated with fuscous, the terminal area with a yellowish tinge; subbasal line black, waved from costa to vein 1 and defined by whitish on outer side; antemedial line strong, black defined by whitish on inner side, waved and somewhat oblique; claviform with its extremity slightly defined by black; orbicular and reniform large, whitish, the former round, incompletely defined by black, the latter with its medial part strongly suffused with rufous and defined by black except above and below; a very irregularly waved black medial line angled outwards to lower angle of cell, diffused and darkening the cell between the stigmata; postmedial line dentate and produced to points on the veins, slightly bent outwards below costa, oblique to vein 4, then incurved, slightly defined on outer side by whitish and with some whitish points beyond it on costa; subterminal line whitish, defined by the contrast between the postmedial and paler yellowish terminal area, irregularly dentate, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules. Hind wing whitish, uniformly suffused with fuscous; cilia yellowish white; the underside whitish, the costal area more

or less irrorated with fuscous, traces of a discoidal lunule and sinuous postmedial line.

Hab. W. Turkestan, Alexander Mts., in Coll. Püngeler. *Exp.* 32–38 millim.

1000. Lycophotia devota.

Agrotis devota, Christ. Rom. Mém. i. p. 116, pl. 7. f. 6 (1884); Staud. Cat. Lep. pal. p. 145.

Head and thorax brownish or olive-grey mixed with fuscous; palpi blackish at sides; tarsi banded with black; abdomen brownish grey irrorated with dark brown. Fore wing grey tinged with olive-yellow and thickly irrorated with dark brown; a waved brown subbasal line from costa to submedian fold; a waved antemedial line angled outwards in cell and above inner margin; claviform with its extremity slightly defined by brown; orbicular and reniform more or less indistinctly defined by brown, the former round; the postmedial line somewhat ill-defined, dentate, slightly bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct, pale, defined by fuscous suffusion on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of dark points. Hind wing fuscous brown; the cilia ochreous white with a brownish line through them; the underside ochreous white, the terminal area suffused with brown.

Hab. Armenia, Caucasus, 1 ♂, 1 ♀; W. Turkestan, Turcomania, 1 ♂, 1 ♀. *Exp.*, ♂ 40, ♀ 42 millim.

1001. Lycophotia renigera.

Noctua renigera, Hübn. Eur. Schmett., Noct. f. 384 (1827); Dup. Lép. Fr. vi. p. 41, pl. 74. f. 6; Herr.-Schäff. Schmett. Eur. ii. pl. 80. ff. 413, 414; Staud. Cat. Lep. pal. p. 145.
Polia dumosa, Donz. Ann. Soc. Ent. Fr. 1837, p. 475, pl. 18. f. 5.
Agrotis turana, Staud. Iris, iv. p. 268 (1891).
Agrotis intermedia, Staud. Iris, iv. p. 269 (1891).
Agrotis erubescens, Staud. Iris, iv. p. 269 (1891).
Agrotis funebris, Staud. Iris, iv. p. 269 (1891).

Head and thorax grey-white mixed with brown and black; palpi blackish at sides; tarsi banded with black; abdomen brownish ochreous irrorated with dark brown. Fore wing grey-white, thickly irrorated with fuscous; a diffused waved blackish subbasal line from costa to submedian fold; a diffused waved antemedial line bent outwards above inner margin; claviform indistinct, yellow, with its extremity defined by fuscous; orbicular and reniform with greyish centres and yellow annuli defined by blackish, the former round, the latter rather ill-defined; the postmedial line irregularly dentate, slightly bent outwards below costa and incurved in discal fold, incurved below vein 4; a yellowish maculate subterminal line defined by fuscous suffusion on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points; cilia yellowish at base. Hind wing fuscous brown with an ochreous tinge; the cilia ochreous; the underside yellowish white, the costal

area irrorated with brown, the terminal area suffused with brown.

Ab. 1. *turana*. Paler and more tinged with ochreous.—Transcaspia and Mongolia.

Ab. 2. *intermedia*. Ochreous white with a violaceous tinge, the markings indistinct.—Armenia; Syria; Persia.

Ab. 3. *erubescens*, Fulvous or reddish with the markings distinct.—N. Syria; Mesopotamia; Kurdistan.

Ab. 4. *funebris*. Much darker, leaden grey.—Armenia; Taurus.

Hab. France, E. Pyrenees; N. Spain; Switzerland, 2 ♀; N. Italy; Hungary; Carinthia; Bosnia; Armenia; Asia Minor, Pontus, Taurus; Syria, Lebanon (*Mrs. Nicholl*), 1 ♂, Palestine, 1 ♀; Persia, Mesopotamia, 1 ♂, 1 ♀; W. Turkestan, Transcaspia, Ferghana; Mongolia. *Exp.* 38–42 millim.

1002. Lycophotia pudica.

Agrotis pudica, Staud. Iris, viii. p. 351, pl. vi. f. 3 (1895); id. Cat. Lep. pal. p. 143.
Agrotis griseola, Staud. Iris, viii. p. 353 (1895).

♂. Head and thorax pale orange; palpi blackish except at tips; tibiæ and tarsi banded with black; abdomen whitish, tinged with ochreous towards extremity and on ventral surface. Fore wing pale orange, slightly irrorated with black; a subbasal black spot on costa with line from it to submedian fold; an oblique antemedial line expanding into spots at costa, submedian fold, and inner margin; a medial shade strong from costa to lower angle of cell, where it is bent outwards, then waved and diffused; a curved diffused obscurely waved postmedial line slightly angled inwards in discal fold; a subterminal blackish patch on costa and faint traces of a subterminal line; a terminal series of blackish points. Hind wing whitish tinged with pale fuscous; cilia ochreous white; the underside with the costal and terminal areas tinged with brown.

Ab. 1. *griseola*. Fore wing suffused with violaceous grey.

Hab. W. Turkestan, Issyk-kul, 1 ♂; E. Turkestan, Ili; Mongolia, Uliassutai Mts. *Exp.* 36 millim.

1003. Lycophotia umbrifera.

Agrotis umbrifera, Alph. Hor. Soc. Ent. Ross. xvii. p. 53, pl. i. f. 38 (1882); Staud. Cat. Lep. pal. p. 143.

♀. Head whitish; palpi black at sides except at base; thorax very pale rufous mixed with fuscous; tibiæ and tarsi banded with fuscous; abdomen dorsally tinged with ochreous. Fore wing ochreous with a fleshy tinge, thickly irrorated and suffused with fuscous, less so on costal half to postmedial line; a waved fuscous subbasal line from costa to submedian fold; a waved fuscous antemedial line; a waved medial shade excurved at lower angle of cell; reniform an indistinct lunule; postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; the terminal area more strongly suffused with fuscous; a pale diffused subterminal

line angled outwards at vein 7, strongly inwards in discal fold, then excurved; cilia ochreous, with a slight dark line at base. Hind wing pale ochreous, the terminal half suffused with fuscous; cilia ochreous white; underside ochreous white with broad fuscous terminal band; fore wing with dark spot on middle of costa.

Hab. W. Turkestan, Ferghana, Turcomania, Issyk-kul, 1 ♀; E. Turkestan, Ili; Mongolia, Uliassutai Mts. *Exp.* 42 millim.

*1004. Lycophotia spreta.

Noctua spreta, Smith, J. N. Y. Ent. Soc. x. p. 36 (1902).

Fawn-grey, more or less strongly tinged with rufous; frons paler grey; palpi black at sides. Fore wing with the markings indistinct, diffused; subbasal line represented by a black striga from costa, then interrupted, obscure or obsolete; antemedial line single, incomplete, sometimes obsolete; claviform and orbicular obsolete; reniform represented by some black scales or irregular spots; a reddish medial line sometimes traceable; postmedial line single, usually marked at costa only, sometimes traceable as a somewhat lunulate line excurved beyond the cell; the terminal area somewhat darker, the subterminal line sometimes represented by whitish points with a dark shade before them on costa; an indistinct lunulate terminal line. Hind wing fuscous, somewhat paler at base, darker in female.

Hab. U.S.A., Florida, Hastings. *Exp.* 33–37 millim. This species is unknown to me.

1005. Lycophotia fimbriola.

Noctua fimbriola, Esp. Schmett. iv. pl. 193. f. 3 (1788); Hübn. Samml. Eur. Schmett., Noct. f. 603; Dup. Lép. Fr. vi. p. 33, pl. 74; Boisd. Ic. pl. 81. f. 4; Staud. Cat. Lep. pal. p. 146.

Agrotis naravigna, Dup. Lép. Fr. vi. pl. 82. f. 2 (1826).

Agrotis raddei, Christ. Hor. Soc. Ent. Ross. xii. p. 246, pl. 6. f. 20 (1877); id. Rom. Mém. ii. pl. 2. f. 9.

Head and thorax ochreous white irrorated with dark brown; tegulæ with dark medial line; tarsi fuscous with pale rings; abdomen grey, irrorated and dorsally suffused with fuscous, the anal tuft ochreous. Fore wing greyish ochreous, irrorated and the terminal area suffused with dark brown; a double, waved, subbasal line from costa to submedian fold; a double, irregularly waved, antemedial line excurved above inner margin; claviform with its extremity slightly defined by brown or obsolete; orbicular and reniform slightly defined by brown, the former small, round, a strongly developed dark sinuous medial shade passing between them; the postmedial line double, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line pale, strongly defined by black-brown suffusion on inner side, angled outwards at vein 7, excurved and somewhat dentate at middle; a terminal series of dark points. Hind wing fuscous brown, the cilia pale with a brown line through them; the under-

side grey irrorated with brown, a curved postmedial line and dark terminal band.

Ab. 1. Fore wing with the dark brown shades replaced by ochreous brown.—Syria.

Ab. 2. *raddei.* Paler and greyer, especially on underside except on terminal area; fore wing with short black streak from lower extremity of subbasal line, the medial shade reduced to a waved line, the subterminal line defined by a series of dentate black marks on its inner side.—W. Asia.

Hab. France, Pyrenees; N. Spain, Tragacete (*Chapman*); Switzerland, Frey Coll.; N. Italy; Hungary, Zeller Coll.; Armenia, Caucasus, Leech Coll.; Asia Minor, Pontus, Taurus; Syria, Leech Coll.; Persia, Shahkuh, Zeller Coll.; W. Turkestan, Turcomania. *Exp.* 30–36 millim.

1006. Lycophotia brunnescens, n. sp. (Plate LXXV. fig. 29.)

♂. Head and thorax rufous mixed with white; head white in front, the palpi except at extremity and frontal tuft at sides black-brown; abdomen whitish, dorsally tinged with fuscous towards extremity, the anal tuft pale fulvous. Fore wing ochreous whitish, suffused and irrorated with purplish brown; the subbasal line double, waved, from costa to submedian fold; the antemedial line indistinct, double, waved; claviform represented by a black point at its extremity; orbicular and reniform whitish defined by brown, the former rather quadrate, open above and below; the postmedial line minutely dentate, slightly bent outwards below costa, excurved to vein 4, then incurved; the terminal area rather more strongly suffused with brown; a very indistinct pale subterminal line angled outwards at vein 7 and excurved at middle; a waved dark terminal line. Hind wing pale brownish; the cilia white with dark line at base; the underside whitish irrorated with brown, a slight dark discoidal point and sinuous postmedial line.

Hab. N. China, Hai-ning (*J. J. Walker*), 1 ♂ type. *Exp.* 42 millim.

1007. Lycophotia molibdoida. (Plate LXXV. fig. 30.)

Agrotis molibdoida, Staud. Hamburg. Magalhaens. iv. p. 61, f. 14 (1898).

♀. Head and thorax leaden fuscous, more or less strongly mixed with ferruginous; abdomen brownish grey, the anal tuft tinged with rufous, the ventral surface ochreous irrorated with fuscous. Fore wing leaden fuscous, more or less strongly suffused with ferruginous; an indistinct waved dark antemedial line excurved below cell; orbicular and reniform small, indistinctly defined by ferruginous, the former round; the postmedial line indistinct, dentate, bent outwards below costa, excurved to vein 4, then incurved. Hind wing brownish fuscous, whitish towards base and inner margin; cilia yellowish white; the underside yellowish white

irrorated with brown, a more or less prominent diffused postmedial line.

Hab. Patagonia, Punta Arenas (*J. J. Walker*), 2 ♀. *Exp.* 34 millim.

1008. Lycophotia nanalis. (Plate LXXV. fig. 31.)

Agrotis nanalis, Grote, Can. Ent. xiii. p. 131 (1881); Smith, Cat. Noct. N. Am. p. 67.

♂. Head and thorax greyish brown, largely mixed with black; abdomen grey irrorated with brown. Fore wing brown suffused with black, most prominently towards inner margin and forming obscure streaks on the veins; subbasal line hardly traceable; antemedial line very indistinct, dentate; claviform elongate, with faint pale outline; orbicular small, lanceolate, with pale outline; reniform small, very indistinct; traces of a dentate medial line; a very indistinct highly dentate postmedial line; faint traces of a dentate subterminal line. Hind wing pale, suffused with fuscous brown; the underside with slight discoidal spot and indistinct postmedial and subterminal points on the veins.

Hab. U.S.A., Nevada, 1 ♂ type. *Exp.* 30 millim.

1009. Lycophotia oliveata. (Plate LXXV. fig. 32.)

Agrotis oliveata, Hmpsn. Ann. S. Afr. Mus. ii. p. 262 (1902).

♂. Head and thorax olive-yellow, more or less strongly mixed with black; tarsi banded with black; abdomen pale ochreous. Fore wing olive-yellow, more or less strongly irrorated with black, the inner and terminal areas sometimes mostly black; a waved subbasal black line from costa to submedian fold; an irregularly dentate antemedial line angled inwards on vein 1; claviform small, defined by black; orbicular and reniform defined by black, the former round; postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct, pale, defined by more or less developed dentate black marks on inner side; a terminal series of black points. Hind wing ochreous white tinged with brown; the underside whiter irrorated with brown, a dark discoidal spot and dentate postmedial line.

Hab. Natal, Charleston, 1 ♂; C. Colony, 1 ♂ type. *Exp.* 42 millim.

1010. Lycophotia præcurrens.

Agrotis præcurrens, Staud. Stett. ent. Zeit. 1888, p. 248; id. Rom. Mém. vi. p. 422, pl. 6. f. 7; id. Cat. Lep. pal. p. 153.
Agrotis bisagittata, Græs. Berl. ent. Zeit. 1888, p. 324.

Head and tegulæ white, slightly mixed with brown, the latter with slight medial line; thorax brown mixed with black and white; tegulæ edged with black; abdomen pale brown, the ventral surface whitish; tarsi fuscous ringed with white. Fore wing bluish or yellowish grey-green; a double, waved, antemedial line from costa

to submedian fold, with yellow patch beyond it on costal area; a double, waved, antemedial line angled inwards on vein 1; claviform large, defined by black and often filled in with yellow; orbicular and reniform each more or less figure-of-eight-shaped, with dark centres and yellow annuli defined by black; a waved medial black line; postmedial line double, minutely dentate, bent outwards below costa, slightly angled inwards at discal fold, excurved to vein 4, then incurved; the terminal area from slightly beyond postmedial line, except on costal area, red-brown; the subterminal line pale, waved, angled outwards at vein 7 and excurved at middle, with series of elongate dentate black marks on its inner side; an apical whitish patch; the veins of terminal area finely streaked with black; a terminal series of small black lunules; cilia chequered brown and grey. Hind wing reddish brown, the terminal area darker; cilia white with a brownish line through them; the underside paler, the costal area suffused with white, a discoidal lunule and indistinct oblique postmedial line.

Hab. Amurland, Ussuri; Japan, Oiwake (*Pryer*), 2 ♀. *Exp.* 48 millim.

1011. Lycophotia præcox.

Noctua præcox, Linn. Syst. Nat. p. 517 (1758); Esp. Schmett. iv. pl. 168. ff. 4–7; Steph. Ill. Brit. Ent., Haust. iii. p. 21; Staud. Cat. Lep. pal. p. 153.

Noctua præceps, Schiff. Wien. Verz. p. 82 (1776); Hübn. Eur. Schmett., Noct. f. 70; Dup. Lép. Fr. vi. pl. 73. f. 2.

Agrotis flavomaculata, Græser, Berl. ent. Zeit. 1888, p. 323.

Head and thorax white and pale brown, the edges of patagia and metathorax with some black scales; legs brown, the tibiæ and tarsi with white and black bands; abdomen grey-brown, the ventral surface with some white, black, and rufous scales. Fore wing pale brassy-green irrorated with white; a waved black subbasal line from costa to submedian fold, defined by white on outer side; a double, waved, antemedial line filled in with white and with a small white spot before it in cell; claviform yellowish defined by black, more or less developed; orbicular and reniform yellowish defined by black, and with rufous or blackish centres, the former round; an indistinct, waved, medial shade; postmedial line double, black, filled in with white, waved, bent outwards below costa, angled inwards in discal fold and incurved below vein 4; costa black, with white points towards apex; a waved white subterminal line angled outwards at veins 7 and 4, and with a red band on its inner side from vein 7 to inner margin, the area beyond it blackish, white at apex; a terminal series of black points defined by a crenulate white line; cilia brown intersected with white. Hind wing pale brown, with dark terminal line; the cilia white. Underside of fore wing pale brown, with the costal and terminal areas greenish white; hind wing brownish white, the costal area white irrorated with brown, a discoidal lunule and postmedial line on costal area.

Ab. 1. *flavomaculata*. Fore wing bluish green ; hind wing much darker.—Mongolia ; Amurland ; Japan.

Hab. Britain, Leech Coll. ; France ; Germany, Zeller Coll. ; Switzerland, Frey Coll. ; Scandinavia ; Russia, Livonia ; Mongolia, Changai Mts. ; Amurland ; Japan, Oiwake (*Pryer*), 1 ♂, 2 ♀. *Exp.* 40–48 millim.

Larva. Meyr. Brit. Lep. p. 93 ; Barrett, Lep. Brit. iii. p. 367, pl. 132. f. 3.

Pale brown to ferruginous ochreous, sides greenish or pale grey ; dorsal line grey-white, developed into a series of confluent spots edged with dark spots ; subdorsal line whitish, dark-edged ; spiracular line whitish ; head pale brownish, with indistinct dark markings. Food-plants : *Salix*, *Artemisia*, grasses, &c. 5–6.

Genus **ADITA**.

Type.

Adita, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 63 (1874)..... *chionanthi*.

Proboscis fully developed ; palpi short, upturned, the 2nd joint roughly scaled ; eyes large, round, smooth, not ciliated ; frons and vertex of head with ridges of scales ; antennæ of male bipectinate to apex, with moderate branches dilated at extremity ; thorax quadrately scaled, the tegulæ with slight dorsal ridge ; fore tibiæ with long curved claw on inner side ; mid and hind tibiæ spined. Fore wing with veins 3 and 5 from close to angle of cell ; 6 from upper angle ; 9 from 10 anastomosing with 8 to form the areole ; 11 from cell. Hind wing with veins 3, 4 from angle of cell ; 5 obsolescent from middle of discocellulars ; 6, 7 from upper angle.

1012. Adita chionanthi.

Phalæna chionanthi, Abbot & Smith, Ins. Georgia, ii. p. 195, pl. 98 (1797) ; Smith, Cat. Noct. N. Am. p. 158.

♂. Head and thorax grey-white mixed with blackish scales, the tegulæ in front and behind and patagia banded with black ; abdomen grey irrorated with fuscous. Fore wing grey suffused with fuscous ; a subbasal black line from costa to vein 1 ; an antemedial black

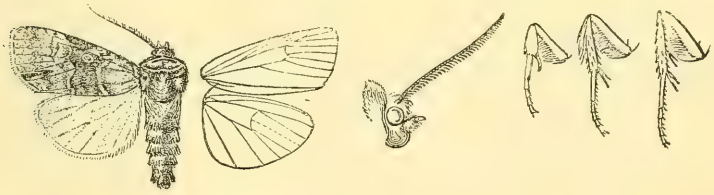


Fig. 93.—*Adita chionanthi*, ♂. ½.

line oblique from costa to median nervure, then erect, and with the small black-edged claviform on its outer edge ; the orbicular and reniform with brownish centres, white annuli, and black outlines, the former round, the latter large, and with black strigæ from costa above each ; the postmedial black line oblique from costa to vein 6, slightly angled inwards at discal fold, at vein 4 recurved to near origin of vein 2, then sinuous ; the subterminal line irregularly

dentate, incurved below vein 3 and defined by whitish on outer side, a black streak from termen crossing it below vein 3; the veins streaked with black at extremity; a fine black terminal line. Hind wing white, the veins, costal area, and termen tinged with brown; the underside with the costal area irrorated with brown; a postmedial series of points on the veins.

Hab. CANADA; U.S.A., 1 ♂, Grote Coll., New York, Georgia, Colorado, Platte Cañon. *Exp.* 44 millim.

Larva. Abbot & Smith, Lep. Ins. Ga. pl. 98 (1797).

Head pale brown with black lateral line. Body pale brown, shaded with darker. Sublateral line black, on joints 5 to 12 with segmentary dorsal black patches widened subdorsally, largest on joint 5, obsolete on 11, and replaced by a dorsal line and subdorsal blotch on 12. Dorsum yellowish, especially on thorax. A reddish line above the black subdorsal line; sides with several broken narrow brown lines. Food-plant, *Chionanthus*.—H. G. D.

Genus APLECTOIDES.

	Type.
Aplectoides, Butl. A. M. N. H. (5) i. p. 193 (1878)	*condita.*
Platagrotis, Smith, Bull. U.S. Nat. Mus. 38, p. 43 (1890)	*speciosa.*

Proboscis fully developed; palpi upturned, the 2nd joint fringed with rough hair in front; frons smooth; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with rough hair and scales, the pro- and metathorax with spreading crests; fore tibiæ slightly spined on inner side only; mid and hind tibiæ spined. Fore wing rather broad; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

A. Fore wing with the orbicular oblique, elliptical.
  a. Fore wing with the lines and stigmata strongly defined by white ..... *speciosa.*
  b. Fore wing with the lines and stigmata not prominently defined by white.
    a^1. Fore wing grey suffused with purplish brown ..... *imperita.*
    b^1. Fore wing pale brown irrorated with white and black ... *pressa.*
B. Fore wing elongate, elliptical ..... *condita.*

1013. Aplectoides speciosa.

Noctua speciosa, Hübn. Schmett. Eur., Noct. f. 491 (1827); Herr.-Schäff. Eur. Schmett. f. 471; Staud. Cat. Lep. pal. p. 139; Smith, Cat. Noct. N. Am. p. 58.
Hadena arctica, Zett. Ins. Lap. p. 939 (1840).
Aplecta schœnnherri, Guen. Noct. ii. p. 79, pl. 7. f. 7 (1852), nec Herr.-Schäff.
Acronycta mixta, Wlk. ix. 62 (1856).
*Polia perquirita*ta, Morr. Proc. Bost. Soc. N. H. xvii. p. 136 (1874).
Agrotis baileyana, Grote, N. Am. Ent. i. p. 92 (1879).
Agrotis speciosa, var. *obscura*, Frey, Lep. Schweiz, p. 117 (1880).
Platagrotis speciosa, var. *ægrota*, Alph. Rom. Mém. ix. p. 211 (1897).

Head and thorax clothed with black and white hair mixed; palpi black, white at extremities; abdomen pale brown more or less mixed with grey; tarsi black ringed with white. Fore wing grey-

white strongly irrorated with black-brown ; a double, waved, black subbasal line from costa to submedian fold filled in with white, and with a slight black streak below its extremity ; a similar antemedial line strongly angled inwards in cell and on vein 1 ; claviform outlined with black ; orbicular and reniform white, irrorated with black and defined by black, the former oblique, elliptical, open above, the latter with some black at centre, two black streaks in the cell between the stigmata ; the postmedial line double, black, filled in with white, bent outwards below costa, then strongly dentate and produced to points at the veins, excurved to vein 4, then slightly incurved ; a subterminal series of dentate black marks

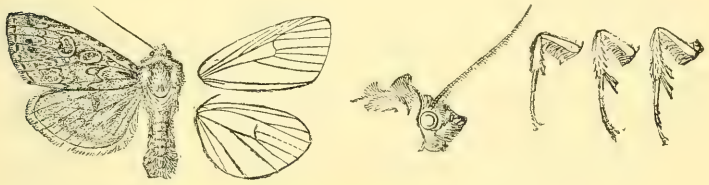


Fig. 94.—*Aplectoides speciosa*, ♂. ½.

slightly bent outwards at vein 7 ; a terminal series of small black lunules ; cilia chequered black and white. Hind wing whitish suffused with pale fuscous brown ; a terminal series of black striæ ; the underside white irrorated with black, a discoidal lunule and curved dentate postmedial line, incurved in discal fold.

Ab. 1. *obscura*. Head, thorax, abdomen, and fore wing much darker.

Ab. 2. *arctica*. Small and dark, with the markings indistinct.—Alpine and Arctic.

Ab. 3. *ægrota*. Small, pale with the markings indistinct.—Mongolia.

Ab. 4. *mixta*. Small and pale, with the markings prominent.—Labrador.

Hab. Canada, Labrador, Hudson's Bay, St. Martin's Falls (*Barnston*), 2 ♀ type *mixta* ; U.S.A., White Mts., 1 ♂, Adirondack Mts., Vermont ; Germany, Hartz Mts., Zeller Coll. ; Switzerland, Frey Coll. ; Scandinavia, Zeller Coll. ; Russia ; Mongolia. *Exp.* 38–50 millim.

Larva. Hoffmann, Stett. ent. Zeit. xlviii. p. 142 (1887).

1st stage : Dull green with black warts and hairs ; head and thoracic shield brown.

2nd stage : Browner, with fine white dorsal and subdorsal lines defined by black ; lateral stripe yellow ; thoracic somites with two subdorsal points on each side, which on abdominal somites are obliquely placed, the abdominal somites have **X**-like black dorsal marks and are dorsally prominently irrorated with black ; spiracles black.

3rd & 4th stages with slight changes.

5th stage: Shining chestnut-brown marbled with black, dorsal and subdorsal lines white on thoracic somites, encroached on by the dark margins on abdomen, where the dorsal line forms black points at segmental incisions, whence diffused forked marks are emitted obliquely forwards to the subdorsal lines, more prominent on terminal somites; lateral line yellowish white, sharply defining the dark dorsal area from the greenish ventral area; spiracles black with white centres. Food-plants: *Vaccinium* and grasses.

1014. Aplectoides imperita.

Oggygia imperita, Hübn. Zütr. ff. 447, 448 (1827); Staud. Cat. Lep. pal. p. 137; Smith, Cat. Noct. N. Am. p. 59.
Agrotis comparata, Möschl. Wien. ent. Mon. vi. p. 131, pl. 1. f. 5 (1862).
Agrotis saxigena, Morr. Proc. Bost. Soc. N. H. xvii. p. 162 (1874).
Bryophila discitincta, Wlk. ix. 27 (1856).

Head and thorax fuscous and grey mixed; palpi blackish; a whitish band sometimes present behind tegulæ; tarsi with white rings; abdomen pale mixed with fuscous brown. Fore wing bluish grey, irrorated and in part suffused with fuscous brown; a black streak above base of vein 1; the subbasal streak indistinct; a waved antemedial line defined by grey on inner side; claviform with its upper edge defined by black; orbicular and reniform grey with brownish centres and defined by black, and with blackish suffusion in cell before and between them, the former oblique, elliptical, open above; the postmedial line dentate, defined by grey on outer side, strongly bent outwards below costa, slightly angled inwards in discal fold, and below vein 4 strongly incurved; some pale points on costa before the subterminal line, which is black, angled outwards at vein 7, inwards in discal fold and incurved below vein 3; a terminal series of black points. Hind wing grey wholly suffused with fuscous brown; the cilia white; the underside with discoidal spot and sinuous postmedial line.

Hab. Canada, Hudson's Bay, St. Martin's Falls (*Barnston*), 1 ♀, type *discitincta*, Labrador, 4 ♂, Zeller & Frey Colls.; Amur. *Exp.* 36 millim.

1015. Aplectoides pressa. (Plate LXXVI. fig. 1.)

Eurois pressus, Grote, Trans. Am. Ent. Soc. v. p. 90 (1874); id. Check-List, pl. 1. f. 7 (1875); Smith, Cat. Noct. N. Am. p. 59.

Head and thorax whitish mixed with pale brown and black; palpi except at tips and sides of frons black; tegulæ with some ochreous at middle; tarsi blackish ringed with white; abdomen brownish. Fore wing pale brown irrorated with white and black, and with diffused ochreous streaks below base of costa and in submedian and discal folds; a double, waved, black subbasal line from costa to submedial fold filled in with white; a similar oblique antemedial line; claviform large, with its upper edge defined by black; orbicular and reniform large, whitish, partly suffused with ochreous, irrorated with brown, defined by black, and with black

in lower part of cell before and between them, the former oblique, elliptical, or nearly round; the postmedial line dentate, defined by whitish on outer side, bent outwards below costa, excurved to vein 4, then incurved; a pale waved subterminal line with dentate black marks on its inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black lunules. Hind wing whitish tinged with fuscous especially on terminal area; a discoidal spot and curved postmedial line more distinct on underside; a terminal series of striæ, cilia white.

Hab. Canada (*Norman*), 1 ♂; U.S.A., Northern, Eastern, Middle and Central States, Massachusetts, New York, 3 ♀ type. *Exp.* 40 millim.

1016. Aplectoides condita. (Plate LXXVI. fig. 2.)

Aplecta condita, Guen. Noct. ii. p. 78, pl. 8. f. 5 (1852); Smith, Cat. Noct. N. Am. p. 59.
Agrotis trabalis, Grote, Can. Ent. ix. p. 198 (1877).

Head and thorax brown mixed with black and grey; tarsi ringed with white; abdomen pale brown. Fore wing reddish brown mixed with white; a subbasal line from costa to submedian fold defined by white on outer side and angled outwards below costa: a black streak above base of vein 1; the antemedial line defined by white on inner side, angled outwards below costa and in submedian fold; claviform defined by black; orbicular and reniform large, whitish, defined by black and with two black streaks in the cell before and between them, the orbicular elongate, elliptical; an indistinct waved line from lower angle of cell to inner margin; the postmedial line defined by white on outer side, dentate, strongly bent outwards below costa, excurved to vein 4, then incurved, and with rufous suffusion between it and the subterminal line, which is grey angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules. Hind wing yellowish white, slightly suffused with brown especially towards termen; a terminal series of brown striæ; the underside with brown discoidal lunule and sinuous postmedial line.

Hab. Canada, Montreal (*Couper*), 1 ♂; U.S.A., Northern, Middle, and Eastern States, 1 ♀ type, Massachusetts, N. York, Albany (*Bailey*), 2 ♀. *Exp.* 44 millim.

Genus **UFEUS**.

	Type.
Ufeus, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 101 (1873)	*satyrica*.

Proboscis fully developed; palpi short, porrect, clothed with long rough hair; frons smooth; eyes large, ciliated; antennæ of male ciliated; head and thorax clothed with rough hair; mid and hind tibiæ spined; abdomen dorsally flattened, the anal tuft large. Fore wing rather narrow, the apex rounded; veins 3 and 5 from near angle of cell; 6 from upper angle or areole; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle or shortly stalked.

A. Fore wing with the lines entirely obsolete ..... *sagittaria.*
B. Fore wing with the postmedial line more or less developed.
a. Fore wing with the postmedial line bent outwards below costa.
a[1]. Fore wing red-brown..... *plicata.*
b[1]. Fore wing black-brown ..... *unicolor.*
b. Fore wing with the postmedial line evenly excurved below costa ..... *satyrica.*

*1017. Ufeus sagittaria. (Plate LXXVI. fig. 3.)

Ufeus sagittarius, Grote, Papilio, iii. p. 31 (1883); Smith, Cat. Noct. N. Am. p. 190.

Red-brown, slightly mixed with pale scales. Fore wing without lines; orbicular replaced by a pale yellowish streak confluent with the lunulate yellowish reniform; cilia intersected with pale colour. Hind wing pale yellowish fuscous, the underside with broad trigonate discoidal spot.

Hab. U.S.A., California. *Exp.* 40 millim. This species is unknown to me; figured from a drawing from type in Brooklyn Inst. Arts & Sci.

1018. Ufeus plicata.

Ufeus plicatus, Grote, Bull. Soc. Nat. Sci. i. p. 102 (1873); Druce, Biol. Centr.-Am., Het. i. p. 266; Smith, Cat. Noct. N. Am. p. 190.

Head and thorax red-brown or dark brown; abdomen pale reddish or grey-brown. Fore wing grey-brown irrorated with fuscous or often suffused with fuscous, more or less distinct black streaks in and below cell usually present; a more or less distinct oblique antemedial black line angled outwards below costa and cell and above inner margin; the postmedial line black, defined by pale

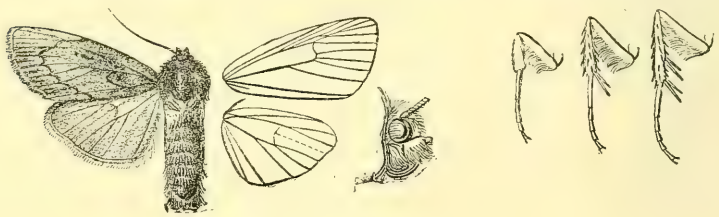


Fig. 95.—*Ufeus plicata*, ♂. ½.

colour on outer edge, strongly bent outwards below costa, then produced to slight streaks on the veins, excurved to vein 5, then oblique; a terminal series of black points or short streaks on the veins; cilia chequered rufous and black. Hind wing pale brownish; the underside with more or less distinct discoidal spot and sinuous postmedial line usually present.

Hab. Canada, 1 ♀; U.S.A., Pennsylvania, Colorado (*Cockerell*), 2 ♀, California, 1 ♀; Arizona, 1 ♀; Mexico, Jalapa (*Hoege*), 2 ♀, Durango (*Becker*), 1 ♀, Godman-Salvin Coll. *Exp.* 44–48 millim.

1019. **Ufeus unicolor.** (Plate LXXVI. fig. 4.)

Ufeus unicolor, Grote, Bull. Geol. Surv. iv. p. 179 (1878); Smith, Cat. Noct. N. Am. p. 190.

♂. Head and thorax black-brown; abdomen fuscous brown. Fore wing black-brown, with traces of a postmedial line bent outwards below costa, excurved to vein 4, then oblique. Hind wing pale brown with a slight reddish tinge.

Ab. 1. Hind wing dark brown irrorated with grey.—Colorado.

Hab. U.S.A., Illinois, 1 ♂ type, Colorado (*Cockerell*), 2 ♂. *Exp.* 42 millim.

1020. **Ufeus satyrica.** (Plate LXXVI. fig. 5.)

Ufeus satyricus, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 101, pl. 3. f. 4 (1873); Smith, Cat. Noct. N. Am. p. 191.

♀. Head and thorax dark brown with a greyish tinge; abdomen pale reddish brown. Fore wing pale brown irrorated with fuscous hair-like scales, thickly to the postmedial line; an indistinct curved antemedial line; slight blackish streaks in base of submedian fold and in end of cell; a curved postmedial line slightly bent outwards below costa and produced to short streaks on the veins; a series of short streaks in the interspaces before termen, the one above vein 5 longest. Hind wing pale irrorated with fuscous hair-like scales; a discoidal lunule; the underside with indistinct sinuous postmedial line.

Hab. Canada; U.S.A., N. York, Pennsylvania, Illinois, 1 ♀. *Exp.* 46 millim.

Genus **ANYTUS.**

	Type.
Anytus, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 144 (1873)	*privata.*

Proboscis fully developed; palpi upturned, reaching vertex of head, the 2nd joint fringed with hair in front; frons smooth, rounded; eyes large; antennæ of male typically ciliated; head and thorax clothed with hair and scales, the prothorax with spreading crest, the metathorax with ridge-like crest; tibiæ fringed with hair; mid and hind tibiæ spined; abdomen with slight dorsal crests and rough hair towards base. Fore wing with the apex rectangular, the termen crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle, or shortly stalked.

Sect. I. Antennæ of male with short fasciculate branches.

1021. **Anytus evelina.** (Plate LXXVI. fig. 6.)

Hadena evelina, French, Can. Ent. xx. p. 71 (1888); Smith, Cat. Noct. N. Am. p. 141.

♂. Head, thorax, and abdomen dark brown mixed with grey; frons above and tegulæ at middle with black lines. Fore wing dark purplish grey, suffused with vinous below end of cell to postmedial

line, in discal fold, and before the subterminal line; the subbasal line waved from costa to submedian fold; the antemedial line angled outwards on subcostal and median nervures and inwards on vein 1; claviform moderately developed, defined by black and with a black streak from its extremity to postmedial line; orbicular and reniform large, defined by black, the former round; the postmedial line black, bent outwards below costa, then strongly dentate at the veins, excurved to vein 4, then oblique and with some whitish on its outer edge in submedian fold; the subterminal line whitish, with dentate brown marks on its inner edge, connected between veins 2 and 8 by black streaks with the terminal series of small black lunules; cilia with fine white line at base. Hind wing white, the inner area tinged with ochreous, the terminal area irrorated with fuscous; a black terminal line; cilia with brown line through them; the underside with small black discoidal lunule.

Hab. U.S.A., Colorado, Glenwood Springs, California, 1 ♂, Truckee, Shasta Co., Sierra Nevada. *Exp.* 48 millim.

Larva. Dyar, Can. Ent. 1894, p. 20.

Head dusky green; ocelli black; body green mottled with white; a narrow dorsal white line; traces of a subdorsal line formed in aggregated mottlings; a stigmatal line passing below the spiracle on somite 12 and on to anal foot; spiracles ringed with black.

Later stages pale brown mottled with black, forming oblique segmental shades; head brown, reticulated with dark brown; cervical shield and anal plate dark brown, the former edged in front with black; piliferous dots black, narrowly ringed with white. Food-plants: *Lupinus*, *Ribes*.

Sect. II. Antennæ of male ciliated.

A. Fore wing with diffused fuscous fascia in submedian fold... *atristrigata.*
B. Fore wing without fuscous in submedian fold.
  a. Fore wing with the dominant colour grey-white ..... *privata.*
  b. Fore wing with the dominant colour fuscous brown ..... *profunda.*
  c. Fore wing with the dominant colour black ..... *obscura.*

*1022. Anytus atristrigata. (Plate LXXVI. fig. 7.)

Anytus atristrigatus, Smith, Pr. U.S. Nat. Mus. xxii. p. 460 (1900).

Grey, more or less tinged with fuscous; head with fuscous lines on frons and between antennæ; tegulæ tipped with black; shoulders with black band; patagia edged with blackish. Fore wing with the markings distinct; a black streak with diffused fuscous on each side of it in submedian fold from base to termen; subbasal line double, blackish, dentate; antemedial line double, black, the two lines well separated at costa, approximated towards inner margin, irregular, and strongly dentate inwards on vein 1; claviform obsolete; orbicular round or elliptical, with whitish annulus; reniform large, broad especially above, with fuscous centre defined by black; medial shade black at costa, angled outwards to lower angle of cell; postmedial line unusually near termen, double, the outer line stronger, black, the included space white, irregularly dentate, bent

outwards below costa and incurved below vein 4, strongly dentate outwards in submedian fold; a blackish mark beyond it in discal fold to the irregular, incomplete, whitish subterminal line; a terminal series of black spots; cilia intersected with black. Hind wing nearly pure white, with a punctiform dark postmedial line and terminal series of lunules; the underside with dark irroration; a discoidal spot and sinuous postmedial line.

Hab. U.S.A., Texas. *Exp.* 37–41 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

1023. Anytus privata.

Polia privata, Wlk. xi. 521 (1857); Smith, Cat. Noct. N. Am. p. 109.
Acronycta monstrata, Wlk. xi. 709 (1857).
Xylina sculpta, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 114, pl. 3. f. 1 (1873).
Anytus plana, Grote, Can. Ent. xiv. p. 183 (1882).

Head and thorax grey mixed with dark brown; palpi with some black at sides; tegulæ with black medial line; tarsi with white rings; abdomen grey mixed with brown. Fore wing grey, irrorated and partly suffused with dark brown; a black streak below base of cell and subbasal striga from costa; an antemedial black line defined by whitish on inner side, bent inwards and interrupted at subcostal nervure, oblique to submedian fold, where it is connected with the postmedial line by a black streak and angled inwards at vein 1; claviform with its extremity defined by black; orbicular and reniform large, whitish defined by black, the former round; the postmedial

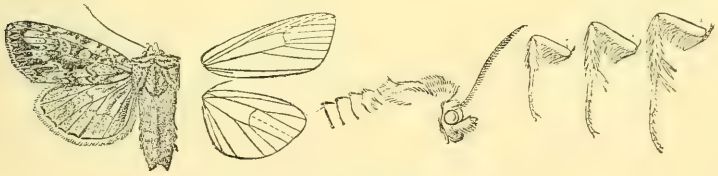


Fig. 96.—*Anytus privata*, ♂. ½.

line strongly bent outwards below costa, then slightly dentate and produced to streaks on the veins, excurved to vein 4 and strongly angled inwards in submedian fold; the subterminal line with diffused brown on its outer edge, excurved from below costa to vein 5, then dentate; a terminal series of black lunules. Hind wing white suffused with brown and the veins brown; a brown terminal line; cilia slightly mixed with brown; the underside with discoidal point and indistinct curved postmedial line.

Hab. Canada (*Norman*), 1 ♀, Vancouver I. (*J. J. Walker*), 1 ♂, U.S.A., Eastern and Middle States, New Hampshire, N. York, 5 ♂, 6 ♀, type and types *monstrata* and *sculpta*, Colorado. *Exp.* 40–44 millim.

1024. Anytus profunda. (Plate LXXVI. fig. 8.)

Anytus profundus, Smith, Can. Ent. xxxii. p. 218, pl. 5. f. 4 (1900).

♂. Head and thorax dark brown mixed with black and grey; tarsi with pale rings; abdomen grey irrorated with fuscous. Fore wing grey suffused with dark brown and fuscous and irrorated with black; traces of a waved subbasal line from costa to submedian fold; an indistinct oblique waved antemedial line defined by grey on inner side; orbicular and reniform irrorated with white and defined by black, the former somewhat oblique, elliptical; the postmedial line minutely dentate, defined by whitish on outer side, bent outwards below costa, then obliquely curved and in submedian fold angled inwards nearly to antemedial line; the subterminal line represented by a series of diffused blackish dentate marks, slightly towards costa, angled outwards at vein 7 and inwards in discal and submedian folds; a terminal series of black points. Hind wing white; a diffused subterminal band of fuscous irroration; the veins tinged with fuscous; a terminal series of black striæ; the underside with the costal and terminal areas irrorated with fuscous; a slight discoidal spot and curved postmedial line.

Hab. Canada, Manitoba, Brandon, 1 ♂. *Exp.* 42 millim.

1025. Anytus obscura. (Plate LXXVI. fig. 9.)

Anytus obscurus, Smith, Can. Ent. xxxii. p. 218 (1900).

♂. Head and thorax black slightly mixed with grey and the frons with brown; pectus with more grey; abdomen grey mixed with fuscous brown, the dorsal crests blackish. Fore wing black irrorated with grey; the subbasal line waved from costa to submedian fold, defined by grey on outer side; the antemedial line oblique, waved, defined by grey on inner side; claviform indistinctly defined by black; orbicular and reniform irrorated with grey and obscurely defined by black, the former rounded, open above; the postmedial line indistinct, dentate, slightly defined by white on outer side, bent outwards below costa, then oblique and angled inwards in submedian fold; the subterminal line represented by an indistinct series of dentate black marks defined by some white suffusion on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing white irrorated with fuscous; the veins and terminal area suffused with fuscous; a terminal black line; cilia white, with fuscous line at base: the underside with the costal and terminal areas irrorated with black, a slight discoidal point and curved postmedial line.

Hab. Canada, Calgary (*Wolley Dod*), 2 ♂. *Exp.* 36 millim.

Genus ANOMOGYNA.

	Type.
Anomogyna, Staud. Cat. p. 110 (1871)	*lætabilis.*

Proboscis fully developed; palpi upturned, broadly scaled in front, the 3rd joint moderate; frons smooth; eyes large, rounded; antennæ of male

typically minutely serrate and ciliated; head and thorax clothed with rough spatulate hair, the latter with spreading crests on pro- and metathorax; fore tibiæ fringed with hair; mid and hind tibiæ spined; abdomen clothed with rough hair at base and with lateral tufts towards extremity. Fore wing broad, the apex rectangular; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of disco-cellulars; 6, 7 shortly streaked.

Sect. I. Antennæ of male strongly serrate and fasciculate.

A. Fore wing more or less strongly tinged with rufous ..... *infimatis.*
B. Fore wing without rufous tinge..... ..... *vernilis.*

1026. Anomogyna infimatis.

Agrotis infimatis, Grote, N. Am. Ent. i. p. 93 (1880); Smith, Cat. Noct. N. Am. p. 65.

Head and thorax grey, mixed with rufous, brown, or black; sides of palpi except at extremity and of frons black; tegulæ with black medial line and usually brown or rufous tips; abdomen brownish grey irrorated with black. Fore wing grey irrorated with fuscous and tinged with brown or rufous, sometimes forming prominent streaks in the interspaces; a black streak below base of cell confluent with the narrow elongate black-defined claviform; subbasal line almost obsolete; antemedial line very indistinct, whitish, and highly dentate; orbicular represented by an oblique whitish streak defined by black; reniform small, blackish, with white annulus

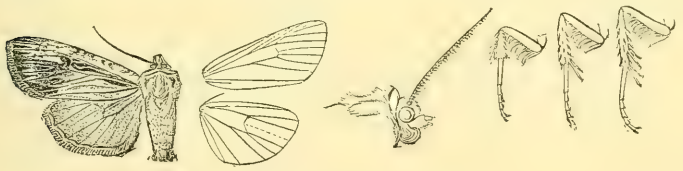


Fig. 97.—*Anomogyna infimatis*, ♂. ½.

defined by black, produced outwards at upper extremity and inwards at median nervure; postmedial line represented by black and white points on the veins, strongly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line only defined by the area beyond it being brownish or rufous, strongly dentate inwards above vein 7 and at discal and submedian folds. Hind wing whitish tinged with yellowish or grey-brown; a terminal series of dark striæ; the underside with traces of discoidal point and curved post-medial line.

Hab. Canada, Vancouver I. (*J. J. Walker*), 1 ♂, 1 ♀; U.S.A., Washington Terr., 1 ♀, California (*Walsingham*), 4 ♂, Havilah, 2 ♀ type. *Exp.* 34–44 millim.

1027. Anomogyna vernilis. (Plate LXXVI. fig. 10.)

Agrotis vernilis, Grote, Can. Ent. xi. p. 57 (1879); Smith, Cat. Noct. N. Am. p. 65.

♂. Head and thorax white and black mixed; palpi black, the 3rd joint grey; antennæ black; tegulæ with black medial line; abdomen brownish. Fore wing grey tinged with brown and irrorated with black; the veins streaked with black; a black streak below base of cell; subbasal line represented by a striga from costa, the antemedial line by a very oblique streak across cell; claviform narrow, elongate, in continuation of the basal streak; orbicular and reniform defined by black, with whitish annuli and grey centres, the former oblique, elliptical, its lower extremity produced and confluent with the reniform; postmedial line bent outwards below costa, then indistinct, oblique, very highly dentate and produced to points on the veins; subterminal line only defined by the area beyond it being rather browner, angled outwards at vein 7 and excurved at middle. Hind wing grey suffused with brown; cilia white at tips; the underside white irrorated with brown and with traces of discoidal lunule and curved postmedial line.

Hab. U.S.A., Colorado, 1 ♂ type, Nevada, California, Sierra Nevada. *Exp.* 38 millim.

Sect. II. Antennæ of male minutely serrate and ciliated.

A. Fore wing with prominent white annuli to orbicular and reniform stigmata ..... *lætabilis.*
B. Fore wing without white annuli to stigmata.
  a. Fore wing with the reniform prominently defined by black.
    a^1. Fore wing with the ground-colour brownish ..... *sincera.*
    b^1. Fore wing with the ground-colour bluish grey ..... *albuncula.*
  b. Fore wing with the reniform replaced by a reddish patch or almost obsolete ..... *gelida.*

1028. Anomogyna lætabilis.

Hadena lætabilis, Zett. Ins. Lap. p. 940 (1840); Staud. Cat. Lep. pal. p. 145.
Hadena obliterata, Zett. Ins. Lap. p. 941 (1840); Guen. Noct. i. p. 238, pl. 5. f. 1.
Ophiusa schönherri, Herr.-Schäff. Schmett. Eur. vi. p. 60, f. 598 (1856), nec Guen.
Caradrina distensa, Ev. Bull. Mosc. 1851, ii. p. 633; id. iv. p. 331 (1855), pl. 1. f. 2 (1856).

Head and thorax grey mixed with white; tarsi blackish ringed with white; abdomen grey. Fore wing grey tinged with brown and thickly irrorated with fuscous black; an indistinct waved subbasal line from costa to submedian fold, with a short black streak below its extremity; an oblique crenulate antemedial line; claviform elongate, outlined with black; orbicular and reniform whitish, irrorated with brown and outlined with black, the former elliptical or nearly round and with blackish streaks or suffusion between it

and reniform; a highly dentate postmedial line defined by white on outer side, bent outwards below costa, excurved to vein 4, then incurved; an indistinct grey subterminal line with some black dentate marks on its inner edge, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing

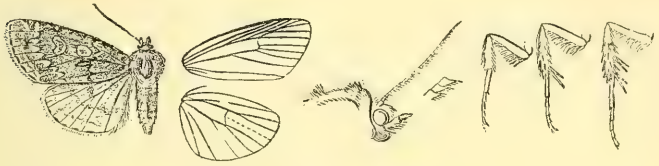


Fig. 98.—*Anomogyna lætabilis*, ♂. ½.

grey slightly irrorated with pale brown; an indistinct discoidal spot and curved postmedial line, more distinct on underside; a terminal series of striæ.

Hab. Canada, Labrador; Scandinavia, Dovrefjeld, 1 ♂, 1 ♀, Finmark, Bossekop (*Chapman*), 3 ♂. *Exp.* ♂ 40, ♀ 32 millim.

1029. Anomogyna sincera.

Agrotis sincera, Herr.-Schäff. Eur. Schmett. ii. p. 412 (1851); Staud. Cat. Lep. pal. p. 138; Smith, Cat. Noct. N. Am. p. 59.
Agrotis zelleri, Herr.-Schäff. Eur. Schmett. ii. ff. 512–13 (1851).
Agrotis rhætica, Staud. Cat. p. 82 (1871).

Head and thorax grey, largely mixed with brown and slightly with black; abdomen pale brown and grey, the anal tuft tinged with rufous. Fore wing grey, slightly tinged with reddish brown and irrorated with black; a black streak above base of vein 1; a subbasal line defined by grey on outer side from costa to submedian fold; the antemedial line defined by grey on inner side, angled outwards below costa, in submedian fold and above inner margin; claviform elongate, defined by black; orbicular and reniform very large, grey, defined by black and with some black in lower part of cell before and between them, the former elliptical, sometimes oblong, open above; a dentate postmedial line defined by grey on outer side, bent outwards below costa, excurved to vein 4, then incurved; an indistinct grey subterminal line angled outwards at vein 7 and excurved at middle, with some fuscous suffusion and pale points before it on costa and some short black streaks before it, most prominent above veins 7, 5, 4, and below 2; a terminal series of small black lunules. Hind wing whitish slightly tinged with brown; a discoidal lunule and sinuous postmedial line distinct on underside; a terminal dark line; cilia white.

The form *rhætica* from the Alps is browner.

Hab. Canada, Labrador; U.S.A., mountains of Northern and Middle States; Germany, mountains; Switzerland, Engadine, 3 ♂, 2 ♀, Zeller & Frey Colls.; Sweden; Russia, Finland; Siberia, Amur. *Exp.* 44–50 millim.

1030. Anomogyna albuncula. (Plate LXXVI. fig. 11.)

Cymatophora albuncula, Ev. Bull. Mosc. ii. p. 627 (1851); Staud. Cat. Lep. pal. p. 139.
grotis subgrisea, Staud. Iris, x. p. 330, pl. 9. f. 25 (1897); id. Cat. Lep. pal. p. 138.

♂. Head, thorax, and abdomen bluish white mixed with fuscous; tarsi banded with black. Fore wing blue-grey, thickly irrorated with black and suffused with fuscous in parts; a sinuous black streak below base of cell; the subbasal line represented by a small black spot on costa; traces of an antemedial line oblique from costa to above vein 1 where it is angled; claviform a small blackish mark; orbicular and reniform bluish white defined by black, the former elongate, elliptical, irrorated with fuscous, the latter suffused with fuscous; postmedial line defined by bluish white on outer side, dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line defined by the area beyond it being slightly darker, two short black streaks before it below costa, streaks on it above and below vein 5 and a small spot in submedian fold; a terminal series of small black lunules. Hind wing pale, uniformly suffused with fuscous; cilia white; the underside grey irrorated with fuscous, a black discoidal lunule, sinuous postmedial line, and terminal series of small lunules.

In the specimen before me the orbicular is heart-shaped on right-hand side, on the left produced towards base and on outer side to become confluent with reniform.

Hab. N. Siberia, Verkhoiansk, 1 ♂; S.E. Siberia. *Exp.* 38 millim.

1031. Anomogyna gelida. (Plate LXXVI. fig. 12.)

Agrotis comparata, Sparre-Schneider, Ent. Tidskr. 1883, p. 77 (nec Möschl.).
Agrotis gelida, Sparre-Schneider, Ent. Tidskr. 1883, p. 88; Staud. Cat. Lep. pal. p. 138.
Agrotis gelida, var. *mevesi*, Auriv. Nord. Fjär. p. 116, f. 22 (1888).

♂. Head and thorax grey mixed with brown; abdomen pale ochreous brown. Fore wing grey irrorated with fuscous; the subbasal line represented by black striæ from costa and cell; a black streak below base of cell, curved downwards near base; the antemedial line angled outwards in cell and submedian fold and above inner margin and inwards on median nervure and vein 1; claviform rather elongate, defined by black and with a blackish streak from it to postmedial line; orbicular large, open above, strongly defined by black below and with slight pinkish annulus; reniform very indistinct, replaced by a pinkish patch; postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved and angled outwards on vein 1; the subterminal line represented by short black streaks above veins 4 and 5; a terminal series of small black lunules. Hind wing ochreous whitish with fine dark terminal line; the underside irrorated with brown, a discoidal lunule and sinuous postmedial line.

Ab. 1. *mevesi*. Browner; fore wing without the pinkish patch on the reniform; hind wing more irrorated with brown.

Hab. Norway, Varanger, Bergen, 1 ♂, Zeller Coll.; Sweden, Jemtland, type † ♂ *mevesi* in Mus. Stockholm, Lapland; N. Siberia, Verkhoiansk, 1 ♂. *Exp.* 46 millim.

Genus XESTIA.

	Type.
Xestia, Hübn. Verz. p. 232 (1827)	*ochreago*.
Hiptelia, Guen. Noct. i. p. 399 (1852)	*ochreago*.
Eicomorpha, Staud. Stett. ent. Zeit. xlix. p. 24 (1888)	*antiqua*.

Proboscis fully developed; palpi upturned, the 2nd joint fringed with hair in front; eyes large, rounded; frons smooth; head and thorax clothed with hair only; the prothorax with ridge-like crest, the metathorax with slight crest; tibiæ spined and fringed with long hair on outer side. Fore wing with the apex somewhat produced and acute and the termen excised below it; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; the termen excised below apex.

Sect. I. Antennæ of male bipectinate, with moderate branches to near apex.

A. Fore wing with the ground-colour grey-brown.
  a. Fore wing with the ante- and postmedial lines obsolete ..... *antiqua*.
  b. Fore wing with the ante- and postmedial lines well-developed ..... *coppeni*.
B. Fore wing with the ground-colour ochreous ..... *ochreago*.

1032. Xestia antiqua.

Eicomorpha antiqua, Staud. Stett. ent. Zeit. xlix. p. 24 (1888); Alph. Rom. Mém. ix. pl. 7. f. 5; Staud. Cat. Lep. pal. p. 154.

♂. Grey; the vertex of head and thorax tinged with brown. Fore wing with the subbasal line represented by some brown scales below costa and cell; some brown suffusion along vein 1; a small brown spot at lower angle of cell; the subterminal line represented by a slight brown patch on costa, and very indistinct excurved part at median nervules.

Hab. W. Turkestan, Turcomania, Sarawschan, Ferghana, 1 ♂. *Exp.* 46 millim.

1033. Xestia coppeni.

Eicomorpha köppeni, Alph. Iris, vi. p. 346 (1896); id. Rom., Mém. ix. p. 211, pl. 7. f. 6; Staud. Cat. Lep. pal. p. 154.

♂. Head and thorax pale brown and whitish, with some fuscous on middle of tegulæ and base of patagia; abdomen pale grey-brown. Fore wing pale grey-brown, whitish at base; the subbasal line represented by slight striæ from costa, the antemedial line oblique, waved, sometimes with a striga beyond it on costa; traces of an oblique elliptical orbicular stigma; reniform small, indistinct, with a striga above it on costa; postmedial line dentate and produced to points on the veins, slightly bent outwards below costa, excurved to vein 4, then

oblique ; subterminal line pale, defined by slight fuscous suffusion on inner side, more prominent at costa, angled outwards at vein 7 and excurved at middle ; a dark terminal line. Hind wing pale fuscous, with indistinct dark discoidal lunule and dark terminal line ; cilia pale, with a brown line through them.

Hab. W. Turkestan, Turcomania, Sarawschan, Askabad, 1 ♂. *Exp.* 52 millim.

1034. Xestia ochreago.

Noctua ochreago, Hübn. Samml. Eur. Schmett., Noct. f. 431 (1827) ; Dup. Lép. Fr. vii. p. 284, pl. 117. f. 8 ; Staud. Cat. Lep. pal. p. 202.
Xestia ochrojois, Hübn. Verz. p. 233 (1827).
Xanthia rubecula, Treit. Schmett. Eur. v. p. 353 ; Herr.-Schäff. Eur. Schmett. ii. p. 70, ff. 437, 438 (1837).

Head and thorax ochreous tinged with red-brown ; abdomen greyish tinged with red-brown. Fore wing ochreous suffused with red-brown ; an indistinct, waved, brown subbasal line from costa to submedian fold ; a waved antemedial line, slightly angled outwards below costa ; claviform rather small, defined by brown ; orbicular and reniform large, defined by brown, the former oblique, elliptical, the

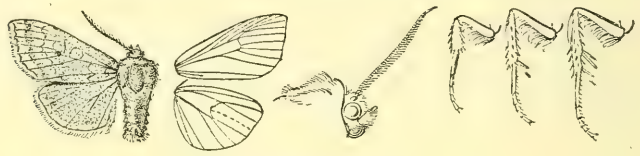


Fig. 99.—*Xestia ochreago*, ♂. ½.

latter with some black in its lower part ; traces of an oblique waved line from lower angle of cell to inner margin ; a minutely dentate postmedial line bent outwards below costa, angled inwards in discal fold, excurved to vein 4, then incurved ; a subterminal somewhat diffused line, slightly angled outwards at vein 7 and excurved at middle ; a fine dark terminal line. Hind wing ochreous, tinged with rufous and suffused with fuscous except at termen. Underside of fore wing with some fuscous suffusion on disk and curved postmedial line.

Hab. France ; Switzerland, Zeller & Frey Colls. ; Italy ; Armenia. *Exp.* 38 millim.

Sect. II. Antennæ of male bipectinate, with very short fasciculate branches, the apical part serrate.

1035. Xestia miniago.

Xanthia miniago, Frey. Neu. Beitr. Schmett. ix. pl. 304. f. 4 (1839) ; Herr.-Schäff. Eur. Schmett., Noct. p. 201, f. 113 ; Staud. Cat. Lep. pal. p. 202.
Hiptelia variago, Staud. Stett. ent. Zeit. 1882, p. 44 ; id. Cat. Lep. pal. p. 202.

Head and thorax brownish ochreous with a pink tinge ; palpi rufous, whitish at tips ; sides of frons and shaft of antennæ whitish ;

abdomen pale brownish ochreous, the ventral surface with a pink tinge. Fore wing pale ochreous brown tinged with pink; an oblique whitish antemedial line, slightly excurved below costa and angled outwards above inner margin; orbicular and reniform slightly defined by whitish, the former oblique, elliptical, the latter with its centre more or less tinged with fuscous; a whitish postmedial line

Fig. 100.—*Xestia miniago*, ♂. ½.

excurved from costa to vein 4, then incurved, and with a series of black points on the veins beyond it; an indistinct pale subterminal line slightly angled outwards at vein 7 and excurved at middle, sometimes with slight fuscous points on its inner side. Hind wing white.

Ab. 1. Antennæ pale brown; fore wing with diffused black medial shade.

Ab. 2. *variago*. Head, thorax, and fore wing darker and irrorated with fuscous.

Hab. S. Russia, Sarepta, Zeller Coll.; Asia Minor, Pontus; W. Siberia, Altai; W. Turkestan, Ferghana, Tarbagatai Mts., Issyk-kul; E. Turkestan, Thian-Shán Mts.; ? E. Siberia. *Exp.* 36–42 millim.

Genus **RICHIA**.

	Type.
Richia, Grote, Can. Ent. xix. p. 44 (1887)	*chortalis*.

Proboscis fully developed; palpi oblique, the 2nd joint fringed with hair in front, the 3rd moderate; frons smooth; eyes large, rounded, smooth; antennæ of male typically minutely serrate and fasciculate; head and thorax clothed with hair and scales, the prothorax with sharp ridge-like crest, the metathorax with slight crest; tibiæ strongly spined; abdomen smoothly scaled. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked or from angle.

Sect. I. Antennæ of male minutely serrate and fasciculate.

A. Fore wing with the ground-colour ochreous.
  a. Hind wing uniformly suffused with fuscous.
    a^1. Fore wing with the subterminal line almost straight. *curviplena*.
    b^1. Fore wing with the subterminal line excurved below costa and at middle ..... *xestiodes*.
  b. Hind wing ochreous, tinged with fuscous towards termen.
    a^1. Fore wing with the postmedial line not dentate..... *fuscisignata*.
    b^1. Fore wing with the postmedial line dentate ..... *brunneago*.

B. Fore wing with the ground-colour grey.
  a. Fore wing tinged with rufous, the medial area suffused with fuscous ..... *parentalis*.
  b. Fore wing without rufous tinge or fuscous suffusion.
    a^1. Fore wing with black spot on subterminal line at costa ..... *distichoides*.
    b^1. Fore wing without black spot on subterminal line at costa ..... *chortalis*.

1036. **Richia curviplena.** (Plate LXXVI. fig. 13.)

Orthosia curviplena, Wlk. xxxiii. 715 (1865); Hmpsn. Moths Ind. ii. p. 185.

Head and thorax ochreous, the scales tipped with rufous; palpi red-brown except at tips; pectus and legs tinged with red-brown; abdomen ochreous, dorsally tinged with brown, ventrally irrorated with rufous. Fore wing ochreous, thickly irrorated with rufous; a double rufous subbasal line from costa to submedian fold; an obliquely curved, double, waved antemedial line with an oblique striga before it in cell, a streak starting from its lower extremity, running along median nervure and then forming upper edge of claviform; orbicular and reniform large, defined by rufous, the former somewhat ovate, and both with a little whitish on their lower edges; a rather indistinct waved medial line angled outwards to lower angle of cell; the postmedial line double, the inner dentate, slightly bent outwards below costa, excurved to vein 4, then incurved, the veins beyond it streaked with rufous; the subterminal line deep rufous, straight, oblique; a fine slightly waved subterminal line. Hind wing ochreous suffused with fuscous, the cilia ochreous; the underside ochreous, the costal area and terminal half irrorated with brown, a slight sinuous postmedial line and obscure diffused subterminal band.

Hab. Sikkim (*Atkinson*, *Möller*, *Pilcher*), 13 ♂, 2 ♀, type. *Exp.* 40 millim.

1037. **Richia xestiodes**, n. sp. (Plate LXXVI. fig. 14.)

Head and thorax pale rufous, the scales tipped with grey; palpi dark rufous, paler at tips; abdomen ochreous dorsally tinged with fuscous, the anal tuft fulvous yellow. Fore wing ochreous with a violaceous tinge and irrorated with rufous; a rufous subbasal line from costa to submedian fold; an oblique antemedial line slightly incurved to costa and excurved above inner margin; claviform defined with rufous above and at extremity; orbicular and reniform large, defined by rufous, the former elliptical, the cell before and between them suffused with rufous; a waved medial shade from lower angle of cell to inner margin; a waved postmedial line excurved below costa, incurved in discal and submedian folds; the subterminal line broadly defined by rufous on inner side and slightly on outer, excurved below costa and at middle; a fine waved terminal line. Hind wing ochreous suffused with fuscous. Underside ochreous, the costal and terminal areas irrorated with brown, a dark postmedial line.

Hab. Kashmir, Goorais Valley (*Leech*), 2 ♂, 1 ♀, type. *Exp.* 38 millim.

1038. **Richia fuscisignata**, n. sp. (Plate LXXVI. fig. 15.)

♀. Head and thorax pale rufous mixed with ochreous; palpi darker rufous except at tips; abdomen ochreous, the ventral surface tinged with rufous. Fore wing pale ochreous suffused with rufous: traces of a whitish subbasal line from costa to submedian fold; an oblique whitish antemedial line with brownish line on its inner side; orbicular and reniform defined by fine whitish lines, the former oblique, elliptical, the latter with blackish marks in its upper and lower extremities; postmedial line whitish, defined by a fine brown line on inner side and a stronger line on outer; subterminal line whitish, defined by brown suffusion on its inner side, angled outwards above vein 6 and excurved at middle; a terminal series of small brown lunules. Hind wing and underside ochreous yellow.

Hab. Kashmir, Goorais Valley (*Leech*), 1 ♀ type. *Exp.* 42 millim.

1039. **Richia brunneago.** (Plate LXXVI. fig. 16.)

Hiptelia brunneago, Staud. Iris, viii. p. 326 (1895); id. Cat. Lep. pal. p. 202.

♂. Head and thorax rufous, the tegulæ with a few white scales; legs browner; abdomen ochreous yellow, tinged with rufous below. Fore wing ochreous irrorated with rufous, more thickly on terminal area; the subbasal line represented by double striæ from costa; an oblique, waved, antemedial line; claviform defined by brown, very small and narrow; the cell suffused with brown, obscuring the orbicular and reniform which are defined by brown, the former elliptical, the latter with fuscous spots in its lower extremity; postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line dark, minutely waved, angled outwards at vein 7 and excurved at middle, with a dark patch before it at costa; a fine dark terminal line. Hind wing ochreous tinged with fuscous especially towards costa and termen; the underside with the costal area irrorated with rufous, a slight discoidal point and sinuous postmedial line.

Hab. Tibet, Sinin Mts., 1 ♂, Kuku-noor, Amdo. *Exp.* 40 millim.

1040. **Richia parentalis.** (Plate LXXVI. fig. 17.)

Agrotis parentalis, Grote, N. Am. Ent. i. p. 44 (1879); id. Ill. Essay, 53, pl. 1. f. 13; Smith, Cat. Noct. N. Am. p. 108.
Agrotis decipiens, Grote, N. Am. Ent. i. p. 45 (1879).

♂. Head, thorax, and abdomen grey mixed with ferruginous red; sides of palpi and frons with some black scales. Fore wing pale purplish red-brown, sparsely irrorated with darker scales; the costal area suffused with blue-grey; a subbasal black line from costa to submedian fold, angled outwards below costa; the antemedial line black, strong from costa to submedian fold, angled

outwards in and below cell and more strongly above inner margin; the medial area suffused with black; the orbicular and reniform greyish, the former round; the postmedial line black, oblique from costa to vein 5, then incurved and dentate; the subterminal line defined by fuscous on inner side and with fuscous patch at costa, angled outwards at vein 7 and excurved at middle; a terminal punctiform line. Hind wing grey-brown irrorated with reddish brown; the cilia pinkish; the underside with slight discoidal point and sinuous postmedial series of points on the veins.

Ab. 1. *decipiens*. ♀. Head and thorax blue-grey irrorated with dark brown; fore wing much darker; the subbasal, antemedial, and postmedial lines indistinct, dark not black.

Hab. U.S.A., Colorado (*Snow*), 1 ♂, 1 ♀, type and type *decipiens*, New Mexico. *Exp.* 42 millim.

*1041. Richia distichoides.

Ammoconia distichoides, Grote, Trans. Kans. Ac. Sci. viii. p. 48 (1883); Smith, Cat. Noct. N. Am. p. 109.

Uniform olivaceous grey. Fore wing slightly irrorated with black; the antemedial line distinct at costa, then indistinct, excurved in interspaces; stigmata approximated, indistinct, tinged with reddish; a medial shade angled outwards to lower angle of cell and distinct from costa to median nervure; postmedial line represented by a series of dark points on the veins; subterminal line faint, dark, arising from a trigonate black spot on costa; an interrupted black terminal line. Hind wing pale fuscous; the cilia paler; the underside with discoidal spot and postmedial line represented by slight streaks on the veins of costal area.

Hab. U.S.A., New Mexico. *Exp.* 35 millim. This species is unknown to me.

1042. Richia chortalis.

Agrotis chortalis, Harr. Bull. Buff. Soc. Nat. Sci. ii. p. 272 (1875); id. iii. pp. 5, 74, pl. 3. f. 9; Smith, Cat. Noct. N. Am. p. 108.
Ammoconia aratrix, Harr. Bull. Buff. Soc. Nat. Sci. iii. p. 74, pl. 3. f. 8 (1875).

♂. Head and thorax grey mixed with reddish brown; palpi black except towards extremity, sides of frons black; abdomen grey, strongly irrorated with reddish brown, the anal tuft ochreous. Fore wing brownish grey irrorated with dark brown; a black point at base of vein 1; an interrupted black subbasal line from below costa to submedian fold; the antemedial line black from costa to submedian fold, angled outwards below costa and interrupted at the veins, indistinct brownish, double and sinuous towards inner margin; claviform obsolete; orbicular and reniform with pale annuli and brownish outline, the former round, the latter large, an indistinct medial line angled inwards in cell and outwards to lower angle; the postmedial line double, excurved from costa to vein 4, then incurved; a pale subterminal line, defined by brownish on

inner side, angled outwards at vein 7 and excurved at middle; a more or less prominent terminal series of dark points. Hind wing white, the veins, costal and terminal areas tinged with brown; the

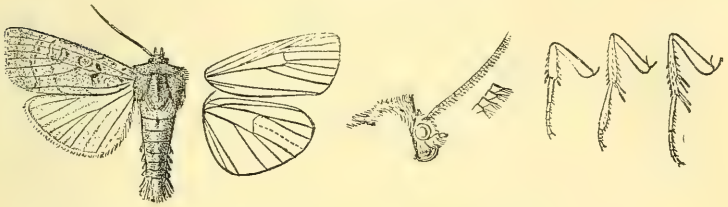


Fig. 101.—*Richia chortalis*, ♂. ½.

underside with discoidal point and curved subterminal series of dark points on the veins.

♀. Hind wing almost wholly suffused with brown.

Ab. 1. *aratrix*. Fore wing without the black on the subbasal and antemedial lines.

Hab. U.S.A., Texas, Colorado, 2 ♂, 2 ♀, type and type *aratrix*, New Mexico, Arizona. *Exp.* 44–48 millim.

Sect. II. Antennæ of male ciliated.

*1043. Richia carnea.

Richia carnea, Druce, A. M. N. H. (7) xi. p. 200 (1903).

♂. Head and thorax deep flesh-red, the scales slightly tipped with grey; tegulæ with two fine grey lines at middle and one at tips; tibiæ irrorated with white; abdomen whitish tinged with flesh-red towards extremity, the anal tuft and ventral surface flesh-red. Fore wing deep flesh-red, the scales very slightly pencilled with grey; the subbasal line represented by a black band from

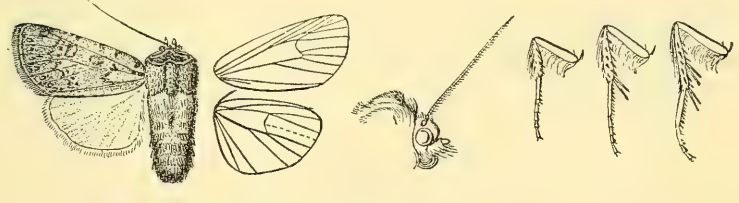


Fig. 102.—*Richia carnea*, ♂. ½.

costa to submedian fold interrupted at cell, with a spot beyond it below cell; a dirty-white fascia in submedian fold from near base to antemedial line, which is represented by an oblique black bar from costa, a point in cell and an oblique striga from median nervure; orbicular and reniform slightly darker brown with fine pale annuli, the former elliptical and with a black point above it on costa; the

postmedial line very indistinct, dentate, with a prominent black spot on it at costa and a series of black points on its inner side between vein 6 and submedian fold, bent outwards below costa, excurved to vein 4, then incurved; some white points on costa towards apex; the subterminal line defined by a brownish patch on its inner side at costa, then represented by a series of small black and white spots, angled outwards at vein 7 and excurved at middle. Hind wing pure white; the underside with the costal area irrorated with red.

Hab. Chile (*Edmonds*), 1 ♂ type in Coll. Druce. *Exp.* 46 millim.

Genus **HYPOXESTIA**, nov.

Type, *H. dilatata*.

Proboscis fully developed; palpi upturned, the 2nd joint broadly scaled and reaching vertex of head, the 3rd naked, moderate; frons smooth; eyes large; antennæ of male with cilia and bristles; head and thorax clothed with hair and scales, the latter with ridge-like dorsal crest; fore tibiæ broadly fringed with hair on outer side, mid and hind tibiæ spined. Fore wing broad, the apex somewhat produced; veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 from upper angle.

1044. Hypoxestia dilatata.

Mesogona dilatata, Butl. A. M. N. H. (5) iv. p. 364 (1879).

Head and thorax deep red-brown; legs darker brown; abdomen brown mixed with grey, the anal tuft fulvous. Fore wing pale red-brown with a purplish tinge; a subbasal rufous line from costa to submedian fold, angled outwards below costa; a minutely waved somewhat oblique antemedial line; orbicular and reniform defined

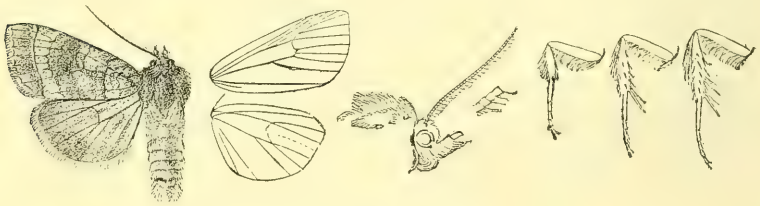


Fig. 103.—*Hypoxestia dilatata*, ♂. ½.

by rufous, large, the former greyish, the latter dark, the cell before and between them deep rufous; a deep rufous band before the postmedial line, which is minutely dentate, excurved from costa to vein 4, then oblique; a slightly sinuous rufous subterminal line with the area beyond it rather darker; a fine crenulate terminal line. Hind wing fuscous brown, the cilia ochreous. Underside of fore wing rufous, with the disk fuscous; hind wing ochreous, with the costal area rufous.

Hab. Japan, Yokohama (*Pryer*), 5 ♂, 1 ♀ type, Kiushiu, 1 ♂, 3 ♀; E. China, Da-laen-sau (*J. J. Walker*), 1 ♀. *Exp.* 46–54 millim.

Genus **TRICHORTHOSIA.**

Type.

Trichorthosia, Grote, Pap. iii. p. 31 (1883)..... *parallela.*

Proboscis rather weak; palpi rather short, oblique, the 3rd joint conical; eyes large, round, hairy and overhung by long cilia; head and thorax clothed with loose hair, the latter without crests; fore tibiæ not spined; mid and hind tibiæ spined, the spines irregularly disposed near end of tibiæ; abdomen without crests. Fore wing with the costa straight, the apex acute, the termen rounded; neuration normal.

This genus is not in the Key and Phylogeny; the only other genus with hairy eyes and spined tibiæ is *Ala*.

*1045. Trichorthosia parallela.

Trichorthosia parallela, Grote, Papilio, iii. p. 31 (1883); Smith, Cat. Noct. N. Am. p. 210.

Olive ochreous. Fore wing with the ante- and postmedial lines double, faint; orbicular represented by a dark point; reniform tinged with red and with some black points below; subterminal line double, the inner the stronger, not continued to costa, the terminal area suffused with white. Hind wing fuscous; the cilia pale.

Hab. U.S.A., New Mexico. *Exp.* 28 millim. This species is unknown to me.

Genus **PARAXESTIA,** nov.

Type, *P. flavicaudata.*

Proboscis fully developed; palpi with the 2nd joint upturned, reaching vertex of head, fringed with hair in front and behind at base, the 3rd joint long, naked, porrect; frons smooth; eyes large, overhung by long cilia; antennæ of male ciliated; head and thorax clothed with long hair without crests; fore tibiæ without spines; mid and hind tibiæ strongly spined; abdomen dorsally clothed with long hair at base, the claspers of male large. Fore wing with the apex somewhat produced, the termen crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cilia crenulate; veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

1046. Paraxestia flavicaudata.

Amphipyra flavicaudata, Warr. P. Z. S. 1888, p. 312; Hmpsn. Moths Ind. ii. p. 196.

Head and thorax yellow-brown mixed with dark brown and many of the hairs tipped with grey; abdomen reddish brown, the ventral surface and claspers of male yellower. Fore wing pale purplish brown; a subbasal brown line from costa to submedian fold and with brownish suffusion between it and the two antemedial lines, which are waved and incurved in cell and at vein 1, the inner

line diffused; the orbicular and reniform only defined by brown lines on their inner and outer sides, a strong yellow-brown medial shade passing between them; the postmedial line waved, bent outwards below costa and incurved below vein 4; some pale points on costa towards apex; the subterminal line defined by a broad yellow-brown band on its inner side, dentate outwards at veins 6, 4,

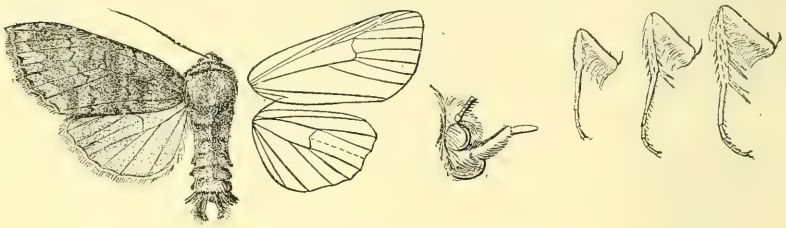


Fig. 104.—*Paraxestia flavicaudata*, ♂. ½.

3, 2; a crenulate terminal line; cilia ochreous with a darker line through them. Hind wing yellow-brown suffused with fuscous; the cilia yellow-brown, with ochreous line at base; the underside with discoidal lunule and slightly sinuous postmedial line.

Hab. Kashmir, Jalauri Pass (*McArthur*), 2 ♂, 1 ♀; Punjab, Thundiani (*Yerbury*), 9 ♀ type. *Exp.* 56–60 millim.

Genus **MYTHIMNA.**

	Type.
Mythimna, Ochs. Schmett. Eur. iv. p. 78 (1816), non descr.; Treit. Schmett. Eur. v. (2) p. 177 (1825)	*oxalina.*
Orthosia, Ochs. Schmett. Eur. iv. p. 79 (1816), non descr.; Treit. Schmett. Eur. v. (2) p. 201 (1825)	*cæcimacula.*
Cerastis, Ochs. Schmett. Eur. iv. p. 84 (1816), non descr.; Treit. Schmett. Eur. v. (2) p. 395 (1825)	*rubricosa.*
Mesogona, Boisd. Ind. Meth. p. 144 (1840)	*acetosellæ.*
Ammoconia, Led. Noct. Eur. p. 97 (1857)	*cæcimacula.*
Pseudoglæa, Grote, Can. Ent. viii. p. 18 (1876)	*blanda.*

Proboscis fully developed; palpi obliquely upturned and fringed with long hair in front; frons smooth; eyes large, rounded; antennæ of male typically ciliated; head and thorax clothed with rough hair only; fore tibiæ fringed with hair; mid and hind tibiæ spined. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the termen crenulate and slightly excised in discal fold; veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked.

Sect. I. Antennæ of male bipectinate to apex, with rather long branches.

A. Fore wing with the cell filled in with black before and between the stigmata.	
a. Fore wing with the orbicular oblique, elliptical, very large.	*coryphæa.*
b. Fore wing with the orbicular U-shaped	*pallescens.*
B. Fore wing with the cell tinged with black before and between the stigmata	*cælebs.*
C. Fore wing with the cell not black	*leucographa.*

*1047. Mythimna coryphæa. (Plate LXXVIII. fig. 9.)

Agrotis coryphæa, Püng. Iris, xiii. p. 118, pl. 4. f. 4 (1899); Staud. Cat. Lep. pal. p. 254.

♀. Head and thorax pale purplish pink; abdomen whitish flesh-colour, pinker below. Fore wing with the basal area, and costal area to subterminal line, pale flesh-pink, the rest of wing rather yellower flesh-colour; subbasal line deep chocolate-brown, angled outwards below costa and ending at vein 1; antemedial line deep chocolate, stronger on costal half, oblique, irregularly sinuous, and with fuscous suffusion before it on inner area; orbicular and reniform very large, pale flesh-pink, the former irregularly oblique, elliptical, open above, the latter with fuscous-suffused centre, some chocolate in cell before and between them; an oblique medial shade from lower angle of cell to inner margin; postmedial line strong towards costa, then fine and dentate, oblique from costa to vein 6, excurved to vein 4, then incurved; subterminal line defined by red-brown suffusion on inner side and by fuscous at costa, angled outwards at vein 7, inwards at discal fold, and excurved at middle. Hind wing ochreous white tinged with pink; the underside with the costal area pinker and with slight discoidal point.

Hab. Tibet, Kuku-noor, type † ♀ in Coll. Püngeler. *Exp.* 42 millim.

1048. Mythimna pallescens.

Semiophora pallescens, Butl. A. M. N. H. (5) i. p. 166 (1878); id. Ill. Het. B. M. ii. p. 29, pl. 30. f. 4; Staud. Cat. Lep. pal. p. 201.
Tæniocampa lata, Staud. Rom. Mém. vi. p. 496, pl. 9. f. 5 (1892).

Bright rufous; palpi blackish at sides. Fore wing with curved subbasal black line from costa to vein 1; the antemedial line bent outwards below costa and angled inwards on vein 1; claviform obsolete; orbicular and reniform concolorous, defined by deep black in the cell before and between them, the former hemispherical, open above, the latter with slight greyish outline; the postmedial line dentate, excurved from costa to vein 4, then oblique; the subterminal line pale, angled outwards at vein 7 and excurved at middle, with a dark patch before it at costa; some dark points on termen sometimes present. Hind wing rather paler, with traces of postmedial and subterminal waved lines; the underside with dark discoidal spot and sinuous postmedial line.

Hab. Amurland, Ussuri; Japan, Yokohama (*Jonas*), 1 ♂, 1 ♀ type, (*Pryer*), 2 ♂, 4 ♀. *Exp.* 46 millim.

1049. Mythimna cælebs. (Plate LXXVI. fig. 18.)

Agrotis cælebs, Staud. Iris, viii. p. 313 (1895); id. Cat. Lep. pal. p. 137.

♂. Head and thorax dark brown mixed with grey; abdomen grey-brown. Fore wing grey-brown; a double, waved, subbasal line from costa to submedian fold; a double dentate antemedial line, strongly angled outwards above inner margin; orbicular and

reniform defined by black and with slight fuscous centres, the former round, open above, the latter open above and below, some fuscous suffusion in cell before and between the stigmata and beyond the reniform; the postmedial line indistinct, dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line ill-defined, diffused, slightly angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules. Hind wing pale ochreous brown, darker towards termen; a fine dark terminal line; cilia pale; the underside greyer irrorated with brown, a small dark discoidal spot and indistinct sinuous postmedial line.

Hab. Tibet, Kuku-noor, 1 ♂, Amdo. *Exp.* 40 millim.

1050. Mythimna leucographa.

Noctua leucographa, Schiff. Wien. Verz. p. 83 (1775); Hübn. Samml. Eur. Schmett., Noct. ff. 411, 572; Dup. Hist. Nat. Lép. Fr., Suppl. iii. p. 440, pl. 39; Staud. Cat. Lep. pal. p. 153.
Noctua lepetitii, Boisd. Ic. Lép. d'Eur. pl. 83. f. 2 (1832).
Orthosia amicta, Donz. Ann. Soc. Ent. Fr. 1847, p. 527, pl. 8. f. 3.

Head and thorax bright rufous, some of the hairs tipped with grey; abdomen greyish brown, the anal tuft and ventral surface bright rufous. Fore wing bright rufous, slightly irrorated with grey; a grey subbasal line from costa to submedian fold; the antemedial line indistinct, waved, slightly defined by grey on inner

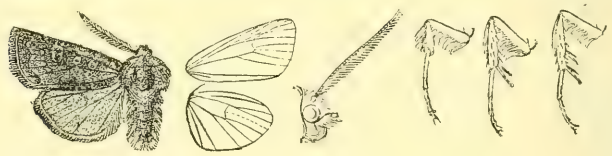


Fig. 105.—*Mythimna leucographa*, ♂. ½.

side; traces of a small greyish claviform; orbicular and reniform with fuscous centres and grey annuli defined by fuscous, the former round, a diffused waved medial shade passing between them; the postmedial line dentate and produced to grey points on the veins, slightly bent outwards below costa, excurved to vein 4, then incurved; the subterminal line greyish, slightly angled outwards at vein 7 and excurved at middle, the area beyond it rather darker; some terminal dark points. Hind wing pale reddish suffused with brown; the underside whitish, irrorated with rufous especially on costal area, a small discoidal spot and postmedial line excurved at middle.

Ab. 1. *amicta*. Head, thorax, and fore wing suffused with fuscous.

Hab. Britain; France; Germany, Zeller Coll.; Switzerland, Frey Coll.; Denmark; Russia, Finland, Livonia, 1 ♂; Rumelia; Amurland. *Exp.* 34–38 millim.

Larva. Meyr. Brit. Lep. p. 107; Barrett, Lep. Brit. v. p. 225, pl. 214. f. 1. Pale green, or reddish ochreous with darker irroration; pale dorsal and sometimes subdorsal lines; a lateral series of dark oblique streaks sometimes present; spiracular line pale greenish or whitish; head greenish. Food-plants: *Salix*, *Rumex*, *Plantago*, etc. 5–7.

Sect. II. (*Orthosia*). Antennæ of male serrate and fasciculate.

A. Fore wing with the ground-colour red-brown ..... *rubricosa*.
B. Fore wing with the ground-colour grey.
a. Fore wing with the lines distinct ..... *cæcimacula*.
b. Fore wing with the lines indistinct ..... *senex*.

1051. Mythimna rubricosa.

Noctua rubricosa, Schiff. Wien. Verz. p. 77 (1776); Fabr. Mant. Ins. ii. p. 176 (1787); Hübn. Eur. Schmett., Noct. f. 430; Dup. Lép. Fr. vi. p. 99, pl. 79; Steph. Ill. Brit. Ent., Haust. ii. p. 160; Staud. Cat. Lep. pal. p. 153.
Noctua mucida, Esp. Schmett. iv. pl. 148. f. 4 (1786).
Noctua pilicornis, Brahm. Ins. ii. p. 193 (1791).
Noctua rufa, Haw. Lep. Brit. p. 232 (1803).
Noctua mista, Hübn. Eur. Schmett., Noct. f. 509 (1827).

Head and thorax purple or red-brown suffused with grey; palpi blackish except at tips; tarsi ringed with white; abdomen dark brown. Fore wing dark red or purple-brown suffused with grey; a waved subbasal line from costa to submedian fold; an oblique

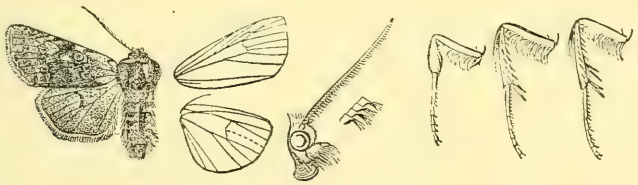


Fig. 106.—*Mythimna rubricosa*, ♂. ½.

waved antemedial line defined by grey on outer side; orbicular and reniform defined by brown, the former round, the latter with some fuscous in its lower extremity; an indistinct waved medial shade oblique from costa to lower angle of cell, then incurved; the postmedial line dentate and produced to points on the veins, defined by grey on outer side, bent outwards below costa, slightly angled inwards in discal fold, and incurved below vein 4; some whitish points on costa towards apex; the subterminal line brown, slightly angled outwards at vein 7 and excurved at middle; a terminal series of blackish points; cilia brown, with a grey line through them. Hind wing fuscous brown, the cilia tinged with pink; the underside pale thickly irrorated with brown, a dark discoidal spot and curved postmedial line.

Ab. 1. *rufa*. Much redder.

One specimen has an oblique bar between vein 8 and middle of cell of hind wing.

Hab. Britain, Leech Coll.; France (*Sand*); Germany, Zeller Coll.; Hungary, Leech Coll.; Switzerland, Frey Coll.; N. Italy; Balkan States; S. Russia; W. Siberia, Altai; W. Turkestan, Ala-tau. *Exp.* 34–40 millim.

Larva. Meyr. Brit. Lep. p. 107; Barrett, Lep. Brit. v. p. 228, pl. 214. f. 2. Pinkish brown with suffused dark medial segmental bands; dorsal line obscurely paler; subdorsal line narrow, interrupted, pale yellow; spiracular line brownish, anteriorly yellow; head pinkish brown with darker markings. Food-plants: *Rumex*, *Plantago*, *Stellaria*, etc. 4–6.

1052. Mythimna cæcimacula.

Noctua cæcimacula, Schiff. Wien. Verz. p. 81 (1776); Dup. Lép. Fr. vi. p. 69, pl. 77; Hübn. Eur. Schmett., Noct. f. 137; Staud. Cat. Lep. pal. p. 178.
Noctua millegrana, Esp. Schmett. iv. pl. 150. f. 1 (1786).
Noctua respersa, Brahm. Ins. p. 541 (1791).
Ammoconia sibirica, Staud. Stett. ent. Zeit. 1882, p. 37.

♂. Head and thorax grey, the hairs tipped with brown and a few with black; palpi blackish at sides; abdomen grey mixed with fuscous. Fore wing brownish grey irrorated with black; a waved subbasal line from costa to submedian fold, becoming black below the cell; a sinuous brown antemedial line angled outwards below the costa and with a black mark on it below the cell; orbicular and reniform large, defined by brown, the former elliptical; an oblique medial shade from lower angle of cell to inner margin; the area beyond the cell suffused with brown; a minutely waved postmedial line defined by whitish on outer side, bent outwards below costa, excurved to vein 4, then incurved; a pale dentate subterminal line defined by fuscous on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing white slightly irrorated with brown, the terminal area suffused with brown; a dark terminal line. Underside of both wings with black discoidal spots.

♀. Hind wing fuscous brown, the cilia white.

Ab. 1. *sibirica*. Paler; the fore wing ochreous or yellowish.—Altai.

Hab. France, Sand Coll.; Germany, Zeller Coll.; Switzerland, Frey Coll.; Hungary, Leech Coll.; Italy; Sicily; Dalmatia; Asia Minor, Pontus; W. Siberia, Altai, 1 ♂. *Exp.* 42–54 millim.

1053. Mythimna senex.

Noctua senex, Geyer, Samml. Eur. Schmett., Noct. ff. 749–50 (1834); Staud. Cat. Lep. pal. p. 178.
Polia vetula, Boisd. Ind. Meth. p. 127 (1840); Dup. Lép. Fr. Suppl. iv. p. 93, pl. 58. f. 4 (1842); Herr.-Schäff. Schmett. Eur., Noct. f. 108; Mill. Ic. iii. pl. 146. ff. 7–9.
Ammoconia mediorhenana, Fuchs, Jhrb. Nass. 1892, p. 91.

♂. Head and thorax white mixed with pale brown; palpi blackish at sides; abdomen white, dorsally tinged with ochreous

and fuscous. Fore wing white irrorated with brown; an indistinct waved subbasal line from costa to submedian fold; an indistinct, double, waved antemedial line, sometimes with slight dark spot below the cell; orbicular and reniform large, obscurely defined by brown, the former round; postmedial line indistinct, dentate, bent outwards below costa, excurved to vein 4, then incurved; traces of a dentate subterminal line; a terminal series of black points. Hind wing white, slightly irrorated with brown especially towards termen. Underside of both wings with discoidal spots.

♀. Hind wing fuscous brown, the cilia white.

Ab. 1. *mediorhenana*. Fore wing almost uniform grey.

Hab. S. France, Sand Coll.; Switzerland; Italy; Sicily; Istria; Dalmatia; Greece, Leech Coll.; Asia Minor, Pontus, 1 ♂, 1 ♀. *Exp.* 42–46 millim.

Larva. Mill. Icones, iii. p. 366, pl. 146. ff. 7–9.

Ochreous, thickly irrorated with brown; dorsal line fine, dark; a broad whitish lateral line; the ventral surface greenish. Food-plants: when young, low-growing plants; when older, the flowers of *Calycotome spinosa*. 6.

Sect. III. (*Mythimna*). Antennæ of male ciliated.

A. Fore wing with the postmedial line produced to points on the veins.
  a. Fore wing with the stigmata clearly defined ..... *sobrina*.
  b. Fore wing with the stigmata very indistinct ..... *indiana*.
B. Fore wing with the postmedial line not produced to points on the veins.
  a. Fore wing with the antemedial line incurved below cell... *blanda*.
  b. Fore wing with the antemedial line not incurved below cell.
    a^1. Fore wing pale reddish-brown ..... *acetosellæ*.
    b^1. Fore wing grey-brown ..... *oxalina*.

1054. Mythimna sobrina.

Noctua sobrina, Boisd. Ind. Meth. p. 105 (1840); Dup. Lép. Fr., Suppl. iv. p. 224, pl. 69. f. 5 *a*; Herr.-Schäff. Eur. Schmett., Noct. ff. 127, 129; Staud. Cat. Lep. pal. p. 136.
Noctua mista, Frr. Beitr. Eur. Schmett. pl. 441. f. 3 (1845), nec Hübn.
Noctua lapponica, Frr. Beitr. Eur. Schmett. pl. 455. f. 4 (1845).
Orthosia gruneri, Guen. Noct. i. p. 336 (1852); Dup. Lép. Fr., Suppl. iv. pl. 69. f. 5.

Head and tegulæ bright rufous; thorax grey suffused with purplish red; tarsi fuscous with ochreous rings; abdomen ochreous brown, the anal tuft and ventral surface more rufous. Fore wing grey, irrorated with brown and suffused with rufous or purplish red, wholly or on terminal half; a slight waved subbasal line from costa to submedian fold with a point beyond it in cell; a waved antemedial line; orbicular and reniform defined by brown, the former round, the latter with some fuscous on its lower part; a somewhat waved medial shade angled outwards to lower angle of cell; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; subterminal lines greyish, slightly angled outwards at vein 7 and excurved at

middle. Hind wing ochreous whitish, suffused with fuscous brown, the cilia rufous; the underside whitish, the costal area tinged with purplish red, the costal and terminal areas irrorated with brown, a small discoidal spot and curved postmedial line.

Ab. 1. *gruneri*. Almost without the red shades.

Hab. Britain, Scotland, Leech Coll.; S. France, Frey Coll.; Germany, Zeller Coll.; Switzerland; Sweden, Lapland; Russia, Livonia, St. Petersburg, Zeller Coll.; W. Siberia, Altai. *Exp.* 36–38 millim.

Larva. Meyr. Brit. Lep. p. 106; Barrett, Lep. Brit. iv. p. 80, pl. 144. f. 2. Reddish brown; sides freckled with grey; dorsal and subdorsal lines pale; dots minute, black; head brownish ochreous. Food-plants: birch, *Calluna*. 9–6.

1055. Mythimna indiana.

Agrotis indiana, Guen. Noct. i. p. 302 (1852).
Tiracola violacea, Butl. Ill. Het. vii. p. 54, pl. 127. f. 5 (1889); Hmpsn. Moths Ind. ii. p. 196.

Head and thorax dark purplish red-brown; abdomen fuscous brown, the anal tuft tinged with rufous. Fore wing purplish red-brown, very sparsely irrorated with white; a very indistinct oblique waved antemedial line; orbicular and reniform indistinctly outlined with red-brown, the former round; an indistinct diffused medial shade angled on median nervure; the postmedial line very indistinct, dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then oblique; traces of a dentate white subterminal line, with red-brown marks on its inner side; a fine pale line at base of cilia. Hind wing fuscous brown, with ochreous line at base of cilia; the underside irrorated with white and with indistinct sinuous postmedial line.

Hab. India, type † ♂ in Coll. Oberthur; Kashmir (*Thompson*), 1 ♀; Kulu, Sultanpore (*G. Young*), 2 ♀; Kangra, Dharmsála (*Hocking*), 2 ♂, 2 ♀, type *violacea*. *Exp.* 52–60 millim.

1056. Mythimna blanda. (Plate LXXVI. fig. 19.)

Choephora blanda, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 86 (1875); Smith, Cat. Noct. N. Am. p. 210.
Pseudoglæa tædata, Grote, Can. Ent. viii. p. 18 (1876).
Pseudoglæa decepta, Grote, Bull. Geol. Surv. vi. p. 271 (1881).

Pale chestnut to grey-brown; head and thorax with the hair pale at tips; the thorax sometimes suffused with blackish. Fore wing irrorated with black; an oblique antemedial blackish line defined by grey on inner side, excurved in cell and to inner margin and incurved in submedian interspace; orbicular and reniform tinged with fuscous and with pale annuli, the former oblique, the latter large; postmedial line punctiform, blackish, defined by whitish on outer side, excurved from costa to vein 4, then oblique; subterminal line pale, with series of black points on its inner side, angled outwards at vein 7 and excurved at middle; a terminal

series of black points or crenulate line. Hind wing pale, tinged with pinkish or fuscous; the cilia ochreous or rufous; the underside with discoidal point and slightly curved postmedial line.

Hab. Canada, Br. Columbia, Vancouver I., 1 ♀ type; U.S.A., Texas (*Belfrage*), 1 ♀ type *tædata*, Washington Terr., Colorado, 1 ♂ type *decepta*, California (*Walsingham*), 1 ♂. *Exp.* 44–46 millim.

1057. Mythimna acetosellæ.

Noctua acetosellæ, Schiff. Wien. Verz. p. 84 (1776); Hübn. Samml. Eur. Schmett., Noct. f. 220; Dup. Lép. Fr. vii. p. 128, pl. 109. f. 2; Staud. Cat. Lep. pal. p. 202.
Noctua acetosellæ, var. *eremicola*, Staud. Cat. p. 114 (1871).

Head and thorax ochreous mixed with red-brown; palpi deep rufous; abdomen brownish orange, the ventral surface pale. Fore wing pale grey-brown irrorated with black; an oblique antemedial brown line defined by whitish on inner side; orbicular and reniform large, with whitish annuli, the former round; postmedial line brown, defined by whitish on outer side, excurved from costa to vein 4, then incurved; an indistinct, pale, minutely waved subterminal line with blackish spots on its inner side, often almost obsolete; cilia red-brown at tips. Hind wing pale pinkish brown, irrorated with fuscous and suffused with fuscous towards termen, leaving the termen and cilia ochreous brown; the underside pale yellowish, with discoidal point and curved postmedial line.

Ab. 1. *eremicola*. Paler; fore wing wholly striated with black.—Altai.

Hab. Britain, once; France; Germany, Zeller Coll.; Hungary, Frey Coll.; Italy; S. Russia, Sarepta, 1 ♂; Armenia; Asia Minor, Pontus, Taurus; W. Siberia, Altai, 1 ♂. *Exp.* 36–40 millim.

1058. Mythimna oxalina.

Noctua oxalina, Hübn. Eur. Schmett., Noct. f. 219 (1827); Dup. Lép. Fr. vii. p. 130, pl. 109. f. 3; Staud. Cat. Lep. pal. p. 202; Smith, Cat. Noct. N. Am. p. 211.
Ipimorpha intexta, Harr. Can. Ent. vii. p. 136 (1875).

Head and thorax reddish brown, the hairs tipped with grey; antennæ with the shaft whitish above; abdomen yellow-brown, the ventral

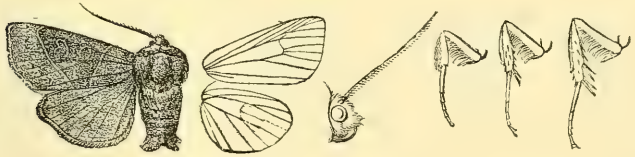


Fig. 107.—*Mythimna oxalina*, ♂. ½.

surface reddish brown mixed with grey. Fore wing yellowish brown, suffused with purple-grey and irrorated with fuscous, the medial area slightly browner; a very oblique brown antemedial line

defined with pale ochreous on inner side and slightly excurved in cell; orbicular and reniform large, brown, with pale ochreous annuli, the former somewhat elliptical; the postmedial line brown, defined on inner side by pale ochreous, excurved from costa to vein 5, then very oblique and almost meeting the antemedial line at inner margin; a minutely waved fuscous subterminal line incurved in discal and submedian folds; a terminal series of points. Hind wing yellowish white tinged with brown; an oblique slightly sinuous postmedial line and sinuous subterminal line diffused on inner side; the underside with discoidal points, the costal area tinged with pink and irrorated with brown.

Hab. U.S.A., New York, Sharon Springs (*Meske*), 1 ♂, type *intexta*; Germany; Austria, Zeller Coll.; Switzerland, Bremgarten, Frey Coll.; Italy; Russia, Livonia, Galitza, St. Petersburg, Ural Mts. *Exp.* 40–44 millim.

Genus **NEUROIS**, nov.

Type, *N. nigroviridis.*

Proboscis fully developed; palpi upturned, not reaching vertex of head and clothed with rough hair; frons obliquely rounded with slight roughened prominence at extremity; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with scales mixed with a few hairs, the metathorax with distinct crest; fore tibiæ fringed with hair; mid and hind tibiæ with a few spines; abdomen clothed with rough hair and with lateral tufts towards extremity. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from below angle of discocellulars; 6, 7 shortly stalked.

A. Fore wing silvery white thickly irrorated with bronze-green, the terminal area brown ..... *nigroviridis.*
B. Fore wing sap-green, suffused with black and marked with pale brown ..... *atrovirens.*
C. Fore wing black-brown ..... *renalba.*

1059. Neurois nigroviridis.

Diphtera nigroviridis, Wlk. xxxii. 615 (1865); Hmpsn. Moths Ind. ii. p. 195.

Head and thorax white mixed with black-brown; palpi blackish; pectus black-brown and grey; tarsi ringed with white; abdomen fuscous, the ventral surface irrorated with white. Fore wing silvery white, thickly irrorated with bronze-green, the terminal area reddish brown; a slight subbasal line from costa to submedian fold; an oblique waved antemedial line defined by whitish on inner side; orbicular and reniform bronze-green with white annuli defined by black, both constricted at middle, the oblique waved medial line passing between them; a dentate postmedial line bent outwards below costa, then almost erect; the subterminal line excurved below costa and at middle and with some dentate black marks before it, elongate below costa and in discal fold; a terminal series of small black lunules with some blue-white before them towards costa; cilia brown, their tips white intersected with brown. Hind wing fuscous

brown with a cupreous tinge; cilia whitish at tips. Underside of fore wing with the stigmata whitish; hind wing irrorated with white except towards termen; a curved postmedial line.

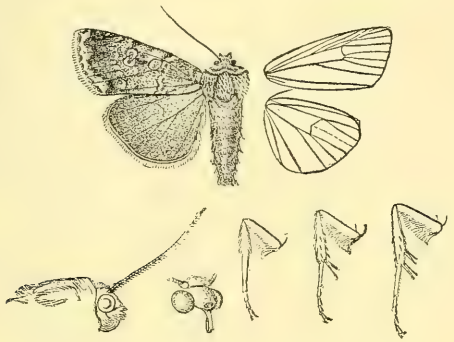


Fig. 108.—*Neurois nigroviridis*, ♂. ½.

Hab. Sikhim (*Atkinson*, *Möller*), 5 ♂, 3 ♀, type. *Exp.* 42–50 millim.

1060. Neurois atrovirens. (Plate LXXVI. fig. 20.)

Diphtera atrovirens, Wlk. xxxii. 614 (1865); Hampsn. Moths Ind. ii. p. 195.

Head and thorax black, mixed with white and a few ochreous-brown scales; tegulæ and patagia edged with white; tarsi ringed with ochreous; abdomen fuscous, the ventral surface irrorated with white. Fore wing dark sap-green largely suffused with black; a white spot at base of median nervure; a subbasal black line from costa to submedian fold defined by cinnamon-brown on outer side; an oblique waved antemedial line angled outwards below costa and defined on inner side by cinnamon-brown, connected by a streak below median nervure with the brown beyond subbasal line; orbicular and reniform brown with white annuli, the former Λ-shaped, open below, the latter constricted at middle and slightly angled inwards on median nervure; veins 1, 2, 3 with pale streaks on median area; postmedial line highly dentate, produced to white points on the veins and defined by pale brown on outer side, bent outwards below costa, excurved to vein 4, then incurved; subterminal line excurved at veins 7, 6 and middle, incurved at discal and submedian folds, with some dentate black marks before it and the area beyond it browner; a terminal series of small black lunules and white points on the veins; cilia brown, their tips white intersected with brown. Hind wing dark reddish brown; cilia white at tips. Underside with the stigmata of fore wing whitish; hind wing irrorated with white except on the terminal area, a dark brown discoidal spot and curved postmedial line.

Hab. Sikhim (*Atkinson*, *Russell*, *Möller*), 11 ♂, 5 ♀, type; Burma, Rangoon (*Scott*), 1 ♀. *Exp.* 48 millim.

1061. Neurois renalba. (Plate LXXVI. fig. 21.)

Mamestra renalba, Moore, Lep. Atk. p. 111 (1882); Hmpsn. Moths Ind. ii. p. 195.

♀. Head and thorax black-brown slightly mixed with white; fore tibiæ and tarsi with ochreous bands; pectus and mid and hind legs mostly grey; abdomen fuscous brown, the anal tuft rufous, the ventral surface greyish. Fore wing black-brown with a cupreous tinge; a subbasal line from costa to submedian fold defined with grey on outer side; the antemedial line oblique, minutely waved and defined by grey on inner side, the area between it and the subbasal line suffused with black; orbicular small, defined with black and sometimes with some white in its lower part, placed on a diffused medial line; reniform defined by black, constricted at middle and almost filled in with white or with white points round it; a waved line from lower angle of cell to inner margin; the postmedial line dentate and produced to white points at the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line excurved below costa and at middle and incurved in discal and submedian folds, with a series of dentate black marks before it, the area beyond it somewhat paler; a terminal black line interrupted by white points at the veins; cilia brown with darker line through them. Hind wing fuscous brown, paler towards costa; the cilia ochreous with brown line through them. Underside of fore wing with the reniform white; hind wing white with discoidal spot, curved postmedial line, and terminal fuscous band.

Hab. Sikhim, Kurseong (*C. Swinhoe*), 7000 ft. (*Atkinson*), 4 ♀ type. *Exp.* 38 millim.

Genus **EUROIS**.

	Type.
Eurois, Hübn. Verz. p. 217 (1827)	*prasina.*
Aplecta, Guen. Ann. Soc. Ent. Fr. vii. p. 217 (1838)	*prasina.*
Matuta, Grote, Can. Ent. vi. p. 116 (1874)	*tenebrifera.*
Adelphagrotis, Smith, Bull. U.S. Nat. Mus. 38, p. 38 (1890)	*stellaris.*

Proboscis fully developed; palpi upturned, the 2nd joint broadly fringed with hair in front, the 3rd short, porrect, with some hair in front; eyes large, rounded; frons smooth; head and thorax clothed with hair and scales and with spreading crests on pro- and metathorax; fore tibiæ fringed with hair, mid and hind tibiæ spined. Fore wing rather broad, the apex rectangular; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

Sect. I. (*Matuta*). Antennæ of male bipectinate, the apical part serrate.

A. Fore wing with the lines strongly marked with black at costa.
  a. Fore wing dark, strongly irrorated with black ..... *youngi.*
  b. Fore wing paler and less irrorated with black ..... *elimata.*
B. Fore wing with the lines not marked with black at costa ... *tenebrifera.*

*1062. Eurois youngi. (Plate LXXVI. fig. 22.)

Semiophora youngii, Smith, Can. Ent. xxxiv. p. 29 (1902).

♀. Carneous grey to fuscous brown, irrorated with black or with dark suffusion, the male redder; palpi blackish at sides, their tips and the frons grey; antennæ of male with long slender yellowish branches; tegulæ rufous or brown at base, with dark or black medial line and greyish tips; patagia irrorated with grey; crests grey. Fore wing with the markings well-defined; subbasal line dentate, black defined by grey on outer side, the area before it irrorated with grey; antemedial line double, filled in with grey, more or less interrupted, erect or slightly curved, somewhat excurved in interspaces, some grey irroration on costal area before it; claviform obsolete; orbicular rather large, somewhat oblique, elliptical, with yellowish or grey annulus; reniform irrorated with grey, with yellowish annulus or entirely yellowish; postmedial line double, the inner line black, lunulate, the outer fuscous, even, filled in with grey, intersected by black at the veins, bent outwards below costa, excurved to vein 4, then oblique or slightly incurved; subterminal line yellowish or grey, sometimes punctiform, irregular, defined on inner side by dark shading, the area beyond it usually paler; a terminal series of dark lunules. Hind wing fuscous brown, with a reddish tinge in male, especially on the cilia; the underside rosy grey to reddish, with dentate irroration, the base paler.

Hab. Canada, Ontario, Ottawa, Mer Bleue (*C. H. Young*) in Coll. Lyman. *Exp.* 32–37 millim.

1063. Eurois elimata.

Noctua elimata, Guen. Noct. i. p. 333 (1852); Smith, Cat. Noct. N. Am. p. 61.
Ammoconia badicollis, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 136, pl. 4. f. 18 (1873).
Agrotis dilucida, Morr. Proc. Ac. Nat. Sci. Phil. xxvii. p. 55 (1875).
Agrotis janualis, Grote, Bull. Geol. Surv. iv. p. 169 (1878).

Head and tegulæ rufous, thorax purple-brown irrorated with grey, or head and thorax uniform, or vertex of head whitish, the tegulæ often with black band near extremity; palpi black-brown, whitish

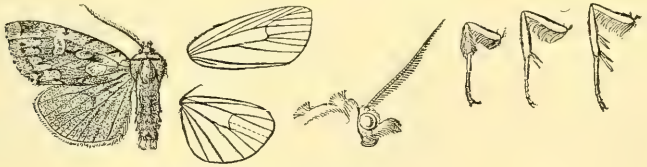


Fig. 109.—*Eurois elimata*, ♂. ½.

at tips; pectus and legs purple-brown irrorated with grey; abdomen reddish brown, rufous towards extremity. Fore wing purplish grey suffused with dark red-brown; a brown subbasal line defined by grey on outer side, acutely angled outwards below costa and ending

at vein 1; a brown antemedial line defined by grey on inner side, acutely angled outwards below costa and above inner margin and excurved below cell; orbicular and reniform grey, defined by black, the former rather oblique, elliptical, and with a black streak below it from antemedial line to the reniform; the postmedial line strongly bent outwards below costa, then dentate and produced to points on the veins, excurved to vein 4, then incurved, defined by grey on outer side, and stronger at costa as also are the antemedial and subbasal lines; an indistinct subterminal line defined by grey on outer side, angled outwards at vein 7 and excurved at middle, a slight terminal series of points. Hind wing fuscous brown, the cilia grey at tips. Underside of both wings with indistinct discoidal spot and curved postmedial line.

Ab. 1. *badicollis*. Fore wing greyer, irrorated with black and sometimes tinged with ferruginous; the black markings strong, the black sometimes filling end of cell; a small black-edged claviform stigma.

Ab. 2. *janualis*. Like typical form, but without the black streak in the cell.

Hab. Canada, Renfrew Co., 1 ♂, 1 ♀; U.S.A., Massachusetts, Abingdon (*Bates*), 1 ♂, 2 ♀, New York, 4 ♂, 4 ♀, type and type *janualis*, Washington D.C., Virginia, 1 ♀, Colorado (*Cockerell*), 1 ♀. *Exp.* 40–44 millim.

1064. Eurois tenebrifera. (Plate LXXVI. fig. 23.)

Hadena tenebrifera, Wlk. xxxiii. 727 (1865); Smith, Cat. Noct. N. Am. p. 62.
Matuta catherina, Grote, Can. Ent. vi. p. 116 (1874).
Agrotis manifestolabes, Morr. Proc. Bost. Soc. N. H. xvii. p. 166 (1874).

Head and thorax rufous, the scales tipped with grey; palpi black, tipped with white; tarsi with pale rings; abdomen pale whitish brown, the ventral surface dark ferruginous. Fore wing ferruginous with some dark irroration; an indistinct subbasal line from costa to vein 1; traces of an indistinct slightly curved antemedial line; orbicular and reniform indistinct, defined by an irroration of white scales on the ground-colour, the former oblique, elliptical; traces of a dentate postmedial line bent outwards below costa and incurved below vein 4; traces of a sinuous subterminal line; some terminal dark points. Hind wing pale reddish brown; the underside with discoidal lunule and sinuous postmedial line.

Hab. Canada (*Norman*), 1 ♀; U.S.A., Northern, Eastern, and Middle States, Massachusetts, Cambridge (*Morrison*), 1 ♂, type *manifestolabes*. *Exp.* 36 millim.

Sect. II. (*Eurois*). Antennæ of male ciliated.

A. Fore wing not tinged with green.
  a. Fore wing with black streak below base of cell ..... *indeterminata*.
  b. Fore wing without black streak below base of cell.
    a^1. Tegulæ white with dark tips ..... *stellaris*.

b^1. Tegulæ pale rufous with dark tips ..... *quarta.*
c^1. Tegulæ brown and black..... *apposita.*

B. Fore wing tinged with green.
a. Hind wing fuscous brown, the cilia ochreous ..... *prasina.*
b. Hind wing bluish black, the cilia pure white ..... *virens.*

1065. Eurois indeterminata. (Plate LXXVI. fig. 24.)

Xylina indeterminata, Wlk. xxxiii. 750 (1865); Smith, Cat. Noct. N. Am. p. 57.
Agrotis innotabilis, Grote, Proc. Ac. Nat. Sci. Phil. xxvi. p. 202 (1874).
Agrotis washingtoniensis, Grote, Bull. U.S. Geol. Surv. vi. p. 259 (1881).

Head and thorax grey-brown or purple-brown, some of the scales tipped with white; palpi black, whitish at tips; frons blackish; tegulæ white, with the terminal half black; tarsi blackish, ringed with white; abdomen grey-brown, the ventral surface brown irrorated with white. Fore wing reddish brown, more or less completely suffused with fuscous; a black streak below base of cell; a double subbasal line from costa to submedian fold; a double oblique dentate antemedial line; claviform outlined with black; orbicular oblique, elliptical, with grey centre and pale annulus; reniform cream-coloured, the centre defined by a reddish-brown line, the cell filled in with black before and between the stigmata; the postmedial line dentate and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved, emitting a dentate ≷-like mark to the claviform and streaks on each side of vein 1 to the antemedial line; a subterminal series of small, dentate, black and white marks; a terminal series of points. Hind wing fuscous brown, somewhat paler towards base; cilia pale, with a brown line through them; underside whitish irrorated with brown, a discoidal point and sinuous postmedial line.

Ab. 1. *innotabilis*. Fore wing with the orbicular more U-like, open above, the postmedial line not connected with claviform and antemedial line.

Hab. Canada, Vancouver I., 1 ♀ type; U.S.A., Washington Terr., 1 ♂, 2 ♀, type *washingtoniensis*, California, Sanzalito, 1 ♀ type *innotabilis*. *Exp.* 36 millim.

1066. Eurois stellaris. (Plate LXXVI. fig. 25.)

Agrotis stellaris, Grote, Can. Ent. xii. p. 153 (1880); Smith, Cat. Noct. N. Am. p. 57.

♀. Head, thorax, and abdomen grey mixed with purple-brown and dark brown; tegulæ ochreous white, with some scales at base and the tips purple-brown. Fore wing purplish grey, slightly suffused with vinous red and irrorated with black; a curved subbasal black line from costa to submedian fold; an oblique sinuous antemedial line; orbicular and reniform ochreous white defined by black, the former oblique, elliptical, and with some grey at centre, the latter with some black on its lower part and with some black suffusion between and beyond them; a sinuous medial line from cell to inner margin; the postmedial line dentate and produced to

points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line whitish, obscurely dentate with some black suffusion on its inner side; a terminal series of black points. Hind wing whitish, irrorated and suffused with fuscous brown; traces of a diffused subterminal line; a sinuous terminal line; underside pale, with dark discoidal lunule and sinuous postmedial line.

Hab. U.S.A., Washington Terr., 1 ♀ type, Nevada. *Exp.* 38 millim.

1067. Eurois quarta. (Plate LXXVI. fig. 26.)

Agrotis quarta, Grote, Bull. U.S. Geol. Surv. vi. p. 258 (1883); Smith, Cat. Noct. N. Am. p. 57.

♀. Head grey-brown; palpi, antennæ, and tegulæ pale rufous, the last dark brown at tips; thorax purplish brown; pectus and legs pale purplish red, the latter irrorated with white and with the tarsi brownish; abdomen grey-brown, with the hair at sides and anal tuft purplish red. Fore wing purplish grey-brown; an indistinct subbasal line from costa to submedian fold; a waved antemedial line; orbicular rounded, with cream-coloured annulus on lower half and slight black outline; reniform cream-coloured suffused with fiery red, its centre and outer edge slightly defined by black, and with slight fuscous suffusion in the cell between the stigmata; the postmedial line indistinct and produced to points at the veins, bent outwards below costa, excurved to vein 4, then incurved; an interrupted whitish subterminal line with black points on its inner edge, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pale brown, suffused with fuscous towards termen; the cilia pale, with a brown line through them; underside whitish irrorated with pale brown, a blackish discoidal lunule and sinuous brown postmedial line.

Hab. U.S.A., California, Sanzalito, 1 ♀ type. *Exp.* 40 millim.

1068. Eurois apposita. (Plate LXXVI. fig. 27.)

Agrotis apposita, Grote, Bull. U.S. Geol. Surv. iv. p. 170 (1878); Smith, Cat. Noct. N. Am. p. 58.

♀. Head and thorax grey-brown or dull reddish brown largely mixed with black; abdomen grey-brown strongly irrorated with fuscous. Fore wing dull reddish brown suffused with fuscous; an indistinct double, waved subbasal line from costa to submedian fold; an oblique double, waved antemedial line; the area from the inner antemedial line to the outer postmedial line pale rufous with a diffused medial dark shade; orbicular and reniform indistinctly defined with fuscous, with some red scales on them, the former rounded, the latter with some black in its lower part; a pale waved subterminal line angled outwards at vein 7 and excurved at middle, some pale points before it on the blackish costal area; a terminal series of black points. Hind wing fuscous brown; the underside

paler thickly irrorated with brown, a dark discoidal spot and sinuous postmedial line.

Hab. Canada, Vancouver I., 1 ♀ type; U.S.A., Washington Terr., 1 ♀, Colorado, California. *Exp.* 40 millim.

1069. Eurois prasina.

Noctua prasina, Schiff. Wien. Verz. p. 82 (1776); Fabr. Mant. Ins, ii. p. 169 (1787); Staud. Cat. Lep. pal. p. 153; Smith, Cat. Noct. N. Am. p. 57.
Noctua herbida, Hübn. Eur. Schmett., Noct. ff. 76, 505; Herr.-Schäff. Schmett. Eur. ii. p. 263; Curt. Brit. Ent. pl. 248; Steph. Ill. Brit. Ent., Haust. iii. p. 30, pl. 27. f. 3; Dup. Lép. Fr. vi. p. 395, pl. 97. f. 3.
Noctua egregia, Esp. Schmett. pl. 119. f. 7 (1792).
Noctua jaspidea, Bork. Eur. Schmett. iv. p. 440 (1793).
Noctua mixta, Haw. Lep. Brit. p. 187 (1809).
Polyphænis herbacea, Guen. Noct. ii. p. 73 (1852).
Agrotis albimacula, Hormuz. Ent. Nachr. 1894, p. 53.

Head whitish and green; palpi black, white at tips; thorax dark or pale red-brown mixed with green, white, and black scales; abdomen grey-brown or whitish brown. Fore wing purple-brown, grey-brown, or rarely whitish with diffused yellow-green fasciæ on costa, in discal fold, below the cell and vein 2, and on inner margin; a double, waved, black subbasal line from costa to vein 1 filled in

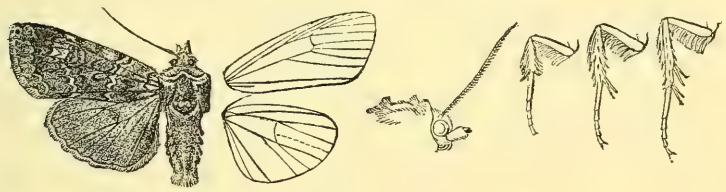


Fig. 110.—*Eurois prasina*, ♂. ½.

with white, a similar oblique antemedial line filled in with green on inner area; claviform defined by black; orbicular and reniform large, defined by black and with greyish annuli, the former oblique, elliptical, the latter with large whitish patch beyond it before the postmedial line, which is double, dentate, and produced to points on the veins, bent outwards below costa, excurved to vein 4, then incurved; some white points on apical part of costa; a subterminal series of dentate green marks, angled outwards at vein 7, with some black before it at costa and dentate black marks below costa and at middle; a terminal series of small black lunules; cilia intersected with fuscous. Hind wing dark or pale red-brown; the cilia yellowish white; the underside with dark discoidal spot, sinuous postmedial line, and diffused subterminal line.

Hab. Canada (*Norman*), 2 ♂; U.S.A., Massachusetts, Beverly, 2 ♂, 2 ♀, New York, 1 ♂, 1 ♀, Iowa, Colorado; Britain; France; Germany, Zeller Coll.; Switzerland, Frey Coll.; Italy; Scandi-

NAVIA; RUSSIA, Livonia, Urals; ARMENIA; C. ASIA, Kuldja, 1 ♂, 1 ♀; SIBERIA; AMUR; JAPAN, Oiwake (*Pryer*), 2 ♀. *Exp.* 46–54 millim.

Larva. Meyr. Brit. Lep. p. 108; Barrett, Lep. Brit. iv. p. 104, pl. 149. f. 1.

Violet-brown, with double series of darker blotches above; dorsal line pale; spiracular line pale, dark-edged above; head pale reddish brown, with dark markings. Food-plants: *Rumex*, birch, *Rubus*, etc.

1070. Eurois virens.

Eurois virens, Butl. A. M. N. H. (5) i. p. 194 (1878); id. Ill. Het. iii. pl. 45. f. 5; Hmpsn. Moths Ind. ii. p. 231; Staud. Cat. Lep. pal. p. 153.

Head, tegulæ, and patagia bright yellow-green; palpi black at sides, pale at tips; antennæ black, tegulæ tipped with black and white, patagia edged with black and white above; thorax rufous, the scales tipped with grey; pectus and abdomen blue-grey; legs black, the fore tibiæ rufous, the tarsi with pale rings. Fore wing slate-grey, the costal area and streaks in the interspaces bright yellow-green, the terminal area with the streaks less developed or absent; a double black subbasal line filled in with green from costa to submedian fold; a similar antemedial line angled outwards below costa and in submedian fold and more strongly above inner margin; orbicular and reniform large, with slate-coloured centres defined by black and purple-red and pale annuli defined by black, the former somewhat oblique, oblong; the postmedial line double, dentate, black filled in with green, bent outwards below costa and incurved below vein 4; the subterminal line represented by a series of green and black dentate marks, angled outwards at vein 7 and excurved at middle, with stronger dentate black marks on its inner side below costa and above veins 5 and 4; a terminal series of small black lunules. Hind wing black-brown, the basal two-thirds suffused with blue-grey; the cilia pure white.

Hab. AMURLAND, Ussuri; JAPAN, Yezo (*Pryer*), 1 ♂, 1 ♀, Hakodaté (*Whitely*), 1 ♂ type; COREA, Gensan (*Leech*), 1 ♂; W. CHINA, Chang-yang (*Pratt*), 1 ♂, 1 ♀; N.W. HIMALAYAS, Thundiani (*Yerbury*), 1 ♂, Simla (*Harford*), 1 ♂, Dalhousie, 1 ♀, Dharmsála (*Hocking*), 1 ♂, 2 ♀. *Exp.* 70 millim.

Subsp. 1. *magnifica*, Moore, Lep. Atk. p. 127 (1882).

Fore wing with the inner area and termen suffused with blood-red.

Hab. SIKHIM (*Pilcher*), 1 ♂, 2 ♀, type.

Genus NÆNIA.

Type.

Nænia, Steph. Ill. Brit. Ent., Haust. ii. p. 165 (1829) ..... *typica*.

Proboscis fully developed; palpi upturned, the 2nd joint fringed with hair in front, produced to a long point at extremity, the 3rd long, naked; frons with tuft of hair; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with hair and scales, the pro- and metathorax with large spreading crests; fore tibiæ fringed with hair; mid and hind tibiæ spined; abdomen dorsally flattened, clothed with rough hair at base of dorsum and with lateral

tufts of hair. Fore wing short and broad; the apex rectangular, the termen crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; the termen crenulate and somewhat excised at discal fold.

A. Fore wing with the veins streaked with white ..... *typica.*
B. Fore wing with the veins not streaked with white ..... *contaminata.*

1071. Nænia typica.

Noctua typica, Linn. Syst. Nat. x. p. 518 (1758); Esp. Schmett. iv. pl. 173. ff. 1–4; Dup. Lép. Fr. vi. pl. 90. f. 1; Steph. Ill. Brit. Ent., Haust. ii. p. 166; Staud. Cat. Lep. pal. p. 185.
Noctua excusa, Esp. Schmett. iv. pl. 197. ff. 1–3 (1786).
Noctua venosa, Hübn. Eur. Schmett., Noct. f. 61 (1827).
Nænia issyka, Püng. Iris, xiii. p. 119 (1900).

Head and thorax brown mixed with grey, the tegulæ and patagia with a few blackish scales at edges; tarsi with pale rings; abdomen grey-brown, the ventral surface brown irrorated with grey. Fore wing grey suffused with brown and irrorated with white; the veins streaked with white; a double subbasal line filled in with whitish from costa to submedian fold and angled outwards below costa; a

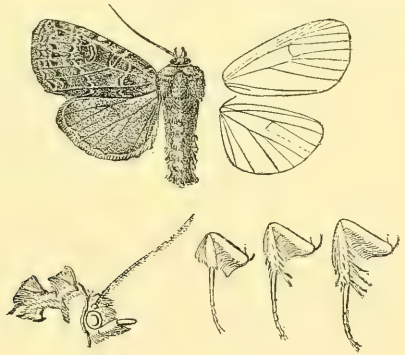


Fig. 111.—*Nænia typica*, ♂. ½.

similar minutely waved oblique antemedial line angled outwards below costa and above inner margin; claviform incompletely defined by black or represented by some black scales; orbicular and reniform with brown centres and whitish annuli defined by black, the former small or well-developed, the latter large, often with black suffusion in the cell between them and beyond the reniform; the postmedial line defined by white on outer side, minutely waved, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line white, with dentate black marks on its inner side, large between veins 4 and 6, angled outwards at vein 7 and incurved below vein 3; a terminal series of small black lunules; cilia with a dark line through them. Hind wing fuscous brown; a dark

terminal line interrupted by minute white streaks at the veins; cilia white at tips; the underside white irrorated with dark brown, a fuscous discoidal lunule, sinuous postmedial line, and some grey on termen of both wings.

Ab. 1. *issyca*. Redder, the termen less waved.—Issyk-kul.

Hab. Britain; France; Germany, Zeller & Frey Colls.; Switzerland; Spain; Italy; S. Russia; Armenia; Bithynia; W. Siberia; W. Turkestan, Altai, Issyk-kul; E. Siberia. *Exp.* 42–48 millim.

Larva. Meyr. Brit. Lep. p. 104; Barrett, Lep. Brit. v. p. 246, pl. 217. f. 1.

Pale greyish ochreous, brown-speckled; subdorsal black marks on somites 11, 12, the latter confluent behind; lateral series of indistinct pale oblique marks; spiracular line pale, black-edged above; ventral surface yellower; head greyish ochreous marked with brown. Food-plants: *Rumex*, *Sonchus*, apple, etc. 8–4.

1072. **Nænia contaminata.** (Plate LXXVI. fig. 28.)

Graphiphora contaminata, Wlk. xxxiii. 710 (1865); Staud. Cat. Lep. pal. p. 185.

Head and thorax reddish brown mixed with grey; palpi blackish at sides, the tarsi blackish with pale bands; abdomen fuscous brown, the ventral surface pale brown irrorated with black. Fore wing pale brown irrorated with black; a double, slightly waved, subbasal black line from costa to submedian fold; a double, waved, somewhat oblique antemedial line; claviform sometimes slightly defined by black; orbicular and reniform with their centres defined by brown and defined by black, the former round, the latter large, the cell between them suffused with black; postmedial line double, dentate, and produced to points at the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line minutely waved, excurved at vein 7 and middle, and with dentate black marks on its inner side below costa and above and below vein 5; a terminal series of black points. Hind wing fuscous brown; cilia pale ochreous with brownish spots; the underside greyer irrorated with black, a black discoidal lunule and sinuous postmedial line, some grey on termen of both wings.

Hab. Amur; Ussuri; Japan, Yokohama (*Jonas*, *Maries*, *Pryer*), 5 ♂, 8 ♀, type, Tsu-shima (*Holst*), 1 ♀, Oiwake (*Pryer*), 1 ♀; China, Shanghai, 1 ♂, 2 ♀, Kiukiang (*Pratt*), 3 ♀. *Exp.* 40–50 millim.

Genus **EPILECTA.**

	Type.
Epilecta, Hübn. Verz. p. 220 (1827)	*linogrisea*.
Hiria, Dup. Cat. Méth. p. 145 (1844), nec *Hyria*, Lam. Moll. 1819	*linogrisea*.

Proboscis fully developed; palpi with the 2nd joint oblique, moderately scaled in front and with slight pointed tuft at extremity, the 3rd joint long, naked, and porrect; frons smooth, with ridges of scales above and between antennæ; eyes large; antennæ of male ciliated; head and thorax clothed with scales, prothorax with spreading crest, a double dorsal ridge-like crest; mid

and hind tibiæ spined; abdomen dorsally flattened. Fore wing narrow, the apex rectangular; veins 3 and 5 from near angle of cell, 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

A. Hind wing orange ..... *linogrisea.*
B. Hind wing pale yellow ..... *accipiter.*

1073. Epilecta linogrisea.

Noctua linogrisea, Schiff. Wien. Verz. p. 79 (1775); Hübn. Eur. Schmett., Noct. ff. 101, 531; Esp. Schmett. iv. pl. 108. f. 3; Godt. Lép. Fr. v. p. 149, pl. 57. f. 5; Staud. Cat. Lep. pal. p. 135.
Agrotis lutosa, Staud. Cat. Lep. pal. p. 135 (1901).

Head and thorax pale rufous; palpi whitish below and at extremity; frons with dark bar; antennæ dark; tegulæ dark brown at base, some white before the medial dark line, the terminal part pale rufous with dark tips; patagia pale grey-brown; legs blackish irrorated with white, and the tibiæ and tarsi ringed with white; abdomen rufous and fuscous brown. Fore wing white to the subterminal line, irrorated and suffused with fuscous towards costa, and the inner area from before medial line beyond the cell extending up

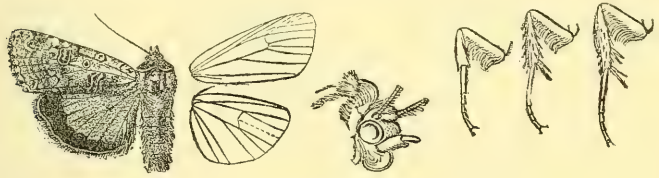


Fig. 112.—*Epilecta linogrisea*, ♂. ½.

to vein 6 strongly suffused with purple; a double, waved, subbasal line from costa to submedian fold; an oblique double, waved, antemedial line, below the cell becoming treble and with a small black spot on its outer edge representing the claviform; orbicular and reniform outlined with black and with fuscous centres, the former small, round, the latter well-developed and with dentate medial shade from it to inner margin; a minutely dentate postmedial double line oblique from costa to vein 4, then incurved; an irregularly waved subterminal line, with fuscous patch with two white point on it on its inner side at costa and produced to short streaks on veins 5, 8; the terminal area bright rufous; a dark waved terminal line; cilia fuscous brown with a whitish line through them. Hind wing orange, with black-brown terminal band with waved inner edge, rather broad at costa, narrowing to a point at tornus; cilia orange, with a fuscous line through them; the underside with the costal area purplish, a small discoidal spot and curved postmedial line indistinct except towards costa.

Ab. 1. *lutosa.* Fore wing more uniform, suffused with yellow-grey instead of white.—Spain, Greece, Asia Minor, Syria.

Hab. France; Germany, Zeller & Frey Colls.; Spain; Greece; Scandinavia; Armenia; Asia Minor, Bithyina, Pontus; Syria. *Exp.* 40 millim.

Larva. Hübn. Eur. Schmett., Raupen iv., Noct. ii. G. *b*.

Purplish brown; diffused dorsal black patches on 1st four somites, the others with double dorsal line; lateral line dark on 1st four somites, then white with black lunules above it; a sublateral series of oblique black streaks on a dark grey stripe. Food-plant, *Primula acaulis*.

1074. Epilecta accipiter.

Spintherops accipiter, Feld. Reis. Nov. pl. 111. f. 29 (1874); Hmpsn. Moths Ind. ii. p. 189.

♀. Head and tegulæ white, sometimes tinged with rufous; palpi black except at tips; antennæ black; thorax black or red-brown; pectus and legs black, the tibiæ and tarsi ringed with white; abdomen fuscous brown, the ventral surface black irrorated with grey. Fore wing pale or deep purple-brown; the basal and costal areas irrorated with grey-green and sometimes also vein 1 and the postmedial line; a double, waved, subbasal line from costa to submedian fold; a double, waved, antemedial line; upper and outer edges of claviform defined by black; orbicular and reniform pale brown, defined by black with some grey-green on them, the cell before and between them black, the former nearly round, the latter large; a waved medial shade from lower angle of cell to inner margin; the postmedial line dentate, produced to short streaks on the veins, sometimes double, bent outwards below costa, excurved to vein 4, then incurved; an irregularly waved subterminal line; the terminal area paler with crenulate black terminal line. Hind wing yellow, with the costal area and a rather narrow terminal band fuscous, the latter narrowing to tornus; the underside with the costal area grey irrorated with black, crossed by a postmedial bar.

Hab. N.W. Himalayas, Ladák, Pangi; Tibet, Yatung (*Hobson*), 2 ♀; Sikhim. *Exp.* 46–48 millim.

Genus TRIPHÆNA.

	Type.
Triphæna, Hübn. Verz. p. 221 (1827)	*interjecta*.
Lampra, Hübn. Verz. p. 221 (1827)	*fimbria*.
Euschesis, Hübn. Verz. p. 221 (1827)	*janthina*.
Abagrotis, Smith, Bull. U.S. Nat. Mus. 38, p. 49 (1890)	*erratica*.

Proboscis fully developed; palpi oblique, the 2nd joint fringed with long hair, produced to a point at extremity, the 3rd joint short, porrect, and slightly fringed with hair below; frons smooth; eyes large; head and thorax clothed with hair and scales, the pro- and metathorax with slight spreading tufts; tibiæ fringed with hairs above, the mid and hind tibiæ spined; abdomen dorsally flattened and fringed with hairs at sides. Fore wing with the margins subparallel, the apex rounded; veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

Sect. I. (*Abagrotis*). Antennæ of male serrate and fasciculate.

*1075. Triphæna erratica.

Agrotis erratica, Smith, Trans. Am. Ent. Soc. xvii. p. 41 (1890); id. Cat. Noct. N. Am. p. 60.

♂. Dull ashen grey to brick-red; palpi blackish at sides; head and thorax pencilled with brown, the tegulæ whitish at tips. Fore wing irrorated with dark brown; traces of a waved subbasal line from costa to submedian fold; an indistinct oblique slightly sinuous antemedial line; orbicular and reniform pale rufous with grey annuli, the former small, oblique, the latter with its lower end

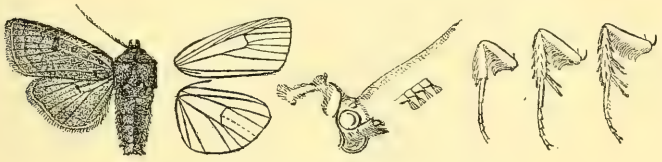


Fig. 113.—*Triphæna erratica*, ♂. ½.

filled in with blackish; the postmedial line bent outwards below costa, incurved in discal fold and below vein 4, with a series of dark points on the veins beyond it; subterminal line whitish, defined by brown on inner side, slightly excurved at vein 7 and at middle; traces of a terminal series of points; the inner margin and a fine line at base of cilia luteous; in the redder specimens the markings are almost obsolete. Hind wing pale grey-brown; the cilia ochreous, white at tips; underside with dark discoidal point and curved postmedial line.

Hab. U.S.A., California, Sierra Nevada. *Exp.* 38 millim.

Sect. II. (*Triphæna*). Antennæ of male ciliated.

A. Hind wing orange.
  a. Fore wing with black bar or spot on costal area before subterminal line.
    a^1. Hind wing with black discoidal lunule.
      a^2. Fore wing with white patch beyond the reniform ..... *efflorescens.*
      b^2. Fore wing without white patch beyond the reniform ..... *semiherbida.*
    b^1. Hind wing without black discoidal lunule ..... *fimbria.*
  b. Fore wing without black bar or spot on costal area before subterminal line.
    a^1. Tegulæ white except at tips ..... *janthina.*
    b^1. Tegulæ concolorous ..... *interjecta.*
B. Hind wing not orange.
  a. Head and tegulæ dark red-brown, contrasting.
    a^1. Pectus and ventral surface of abdomen tinged with red-brown ..... *rufipectus.*
    b^1. Pectus and ventral surface of abdomen not tinged with red-brown ..... *brunneicollis.*

b. Head and tegulæ not dark red-brown.
  a^1. Tegulæ black at base, pale at tips ..... *hero*.
  b^1. Tegulæ with the tips black or rufous, contrasting.
    a^2. Fore wing with black streak below base of cell.
      a^3. Fore wing with the cell black between the stigmata.
        a^4. Fore wing with the orbicular **V**-shaped, open above ..... *formalis* ab. *facula*.
        b^4. Fore wing with the orbicular rounded, open above ..... *crenulata*.
      b^3. Fore wing with the cell not black between the stigmata.
        a^4. Fore wing with the orbicular **V**-shaped, open above.
          a^5. Fore wing with the postmedial line single, crenulate ..... *costata*.
          b^5. Fore wing with the postmedial line double, minutely waved.
            a^6. Thorax and fore wing dark purple-brown ..... *exsertistigma*.
            a^6. Thorax and fore wing pale rufous to purplish grey ..... *formalis* ab.
        b^4. Fore wing with the orbicular rounded, open above ..... *confusa*.
    b^2. Fore wing without black streak below base of cell.
      a^3. Fore wing with the orbicular **V**-shaped, open above ..... *formalis*.
      b^3. Fore wing with the orbicular rounded, indistinct.
        a^4. Fore wing with the costal area white to postmedial line ..... *vittifrons*.
        b^4. Fore wing with the costal area concolorous ..... *carissima*.
  c^1. Tegulæ with the tips concolorous.
    a^2. Fore wing with the costal area pale to postmedial line.
      a^3. Fore wing with the costal area white ..... *bimarginalis*.
      b^3. Fore wing with the costal area pale rufous. *totonaca*.
    b^2. Fore wing with the costal area concolorous.
      a^3. Fore wing with the costal half of medial area suffused with black ..... *undosa*.
      b^3. Fore wing with the cell black between the stigmata.
        a^4. Fore wing with the orbicular **V**-shaped, open above ..... *formalis* ab.
        b^4. Fore wing with the orbicular rounded.
          a^5. Fore wing blackish, the stigmata white ..... *mirabilis*.
          b^5. Fore wing and stigmata grey-brown... *discoidalis*.
      c^3. Fore wing with the cell not black between the stigmata.
        a^4. Fore wing with the terminal area paler than postmedial area.
          a^5. Fore wing with the ground-colour greyish.
            a^6. Fore wing with the lines not marked by black points at costa. *Exp.* 30–36 millim. ..... *placida*.
            b^6. Fore wing with the lines marked by black points at costa. *Exp.* 40 millim. ..... *variata*.

b^5. Fore wing with the ground-colour rufous to dark brown.
a^6. Fore wing with the lines double.
a^7. Fore wing broad. *Exp.* 40–44 millim. ..... *alternata.*
b^7. Fore wing narrow. *Exp.* 32–38 millim. ..... *anchoceiloides.*
b^6. Fore wing with the lines single. *Exp.* 30 millim. ..... *minimalis.*
b^4. Fore wing with the terminal area concolorous with postmedial area.
a^5. Fore wing not strongly irrorated with fuscous.
a^6. Fore wing with orbicular **V**-shaped, open above ..... *formalis* ab.
b^6. Fore wing with the orbicular rounded.
a^7. Fore wing pale rufous ..... *cupidissima.*
b^7. Fore wing bright rufous..... *belfragei.*
c^7. Fore wing red-brown to grey-brown ..... *trigona.*
d^7. Fore wing blackish brown..... *inelegans.*
b^5. Fore wing strongly irrorated with fuscous ..... *lætula.*

1076. Triphæna efflorescens.

Triphænopsis efflorescens, Butl. A. M. N. H. (5) iv. p. 361 (1879); Staud. Cat. Lep. pal. p. 137.
Triphæna jankowskii, Oberth. Et. Ent. x. p. 20, pl. 2. f. 10 (1884).

Head and thorax black, rufous, green, and white mixed; palpi black, white at extremity; legs dark brown and white, the tarsi ringed with white; abdomen brown, the ventral surface whitish. Fore wing purple-brown, suffused with moss-green on costal and submedian areas to postmedial line and on inner margin to antemedial line; indistinct double, waved, subbasal and antemedial lines; claviform represented by black points at its origin and extremity; orbicular and reniform open above and below, defined at sides by green and black lines and with the cell before and between them black, a diffused white patch beyond the reniform; postmedial line double, dentate, produced to white points on the veins, bent outwards below costa and incurved below vein 4; an irregularly waved pale subterminal line defined by blackish on each side and with black patch before it at costa, with two white points on it and short black streak below it; a crenulate black terminal line. Hind wing orange, with the costal area, fasciæ below cell and on inner area, a large discoidal lunule, and broad terminal band black; the cilia orange. Underside of fore wing ochreous, largely suffused with black; hind wing with the costal area ochreous irrorated with brown, a black streak in cell and the fasciæ below cell and on inner area narrow.

Hab. Amurland, Ussuri; Japan, Yokohama (*Pryer*, *Manley*), 2 ♂, 1 ♀, Tokio (*Maries*), 1 ♀, Myanoshita (*Yerbury*), 1 ♂, Oiwake (*Pryer*), 2 ♂, 1 ♀. *Exp.* 50 millim.

1077. Triphæna semiherbida.

Triphæna semiherbida, Wlk. xi. 743 (1857); Butl. Ill. Het. vi. pl. 110. f. 1; Hmpsn. Moths Ind. ii. p. 193.
Epilecta decorata, Butl. A. M. N. H. (5) iv. p. 361 (1879).

Head and tegulæ sap-green, frons whitish; palpi black, white at extremity; antennæ black; thorax red-brown mixed with grey, the tibiæ and tarsi banded with white; abdomen fuscous brown, the ventral surface irrorated with white. Fore wing red-brown, suffused with sap-green on basal and costal areas, in submedian fold, and on postmedial line; a double, waved, subbasal line from costa to vein 1, followed by a black point in cell; a double, waved, antemedial line; orbicular and reniform with grey centres and annuli and defined by black on inner and outer sides, the former round, the latter well developed; a double, waved, postmedial line bent outwards below costa, excurved to vein 4, then strongly incurved; a minutely waved greyish subterminal line, angled inwards in discal fold and incurved below vein 3 and with a short black streak before it below costa; a crenulate black terminal line. Hind wing orange-yellow, the basal, inner, and costal areas suffused with brown; a large black discoidal lunule; a broad black terminal band expanding on apical area and angled inwards below vein 2; the termen irregularly and cilia yellow. Underside of fore wing with the inner area yellow, the costal and terminal areas grey; hind wing with the costal area and termen grey.

Hab. Japan, Yokohama (*Pryer*), 1 ♂, 2 ♀ type, Oiwake (*Pryer*), 2 ♂, 1 ♀, Toriitoge (*Lewis*), 1 ♀; W. China, Omei-shan, 1 ♂, Chia-kou-ho (*Pratt*), 1 ♂; N.W. Himalayas, Kulu, Sultanpore (*Young*), 1 ♀, (*Reid*) 1 ♂ type, Simla (*Harford*), 2 ♂, Dharmsála (*Hocking*), 3 ♂, 1 ♀; Nepal, 1 ♀; Sikhim (*Lidderdale*), 2 ♂. *Exp.* 44–50 millim.

1078. Triphæna fimbria.

Noctua fimbria, Linn. Syst. Nat. xii. p. 842 (1767); Esp. Schmett. Eur. iv. pl. 103. f. 1; Hübn. Eur. Schmett., Noct. f. 102; Herr.-Schäff. Schmett. Eur. ii. p. 328; Godt. Lép. Fr. v. pl. 60. ff. 1, 2; Steph. Ill. Brit. Ent., Haust. ii. p. 105; Staud. Cat. Lep. pal. p. 135.
Phalæna domiduca, Hüfn. Berl. Mag. iii. p. 404 (1767).
Noctua solani, Fabr. Mant. Ins. ii. p. 150 (1787).

Head and thorax buff, rufous or greenish; palpi and antennæ brown or partly white; pectus and legs white, the latter irrorated with brown and the tarsi ringed with brown; abdomen deep orange, the ventral surface white, rufous at extremity. Fore wing buff, rufous, or greenish, with more or less pale or white suffusion on medial and subterminal areas towards costa; a subbasal line from costa to submedian fold; an oblique slightly curved antemedial line, expanding at costa and defined by whitish on inner side towards costa; orbicular and reniform with white annuli approximated or touching at lower extremities; the postmedial line double, filled in with white, oblique, and with a slight inward curve towards costa, excurved to vein 4, then oblique; a whitish subterminal line

angled outwards at vein 7, then sinuous, with a rufous or greenish patch with two white points on it on its inner side at costa and a black spot below costa. Hind wing deep orange, with black terminal band very broad at costa, narrowing to tornus; the cilia orange. Underside with the costal area of both wings tinged with white towards apex.

Hab. Britain; France; Germany, Zeller Coll., Silesia, Frey Coll.; Sicily, Zeller Coll.; Algiers; Greece (*Merlin*); Scandinavia; Armenia; Asia Minor. *Exp.* 50–56 millim.

Larva. Meyr. Brit. Lep. p. 105; Barrett, Lep. Brit. iv. p. 7, pl. 137. f. 2.

Reddish ochreous, brown-dotted, paler laterally; dorsal line obscurely pale; a dark bar on somite 12 edged with pale behind; spiracles pale on dark spots; head brown, with dark reticulations. Food-plants: birch, hawthorn, *Salix*, *Rumex*, etc. 9–5.

1079. Triphæna janthina.

Noctua janthina, Schiff. Wien. Verz. p. 78 (1776); Esp. Schmett. iv. pl. 104. ff. 4, 5; Hübn. Samml. Eur. Schmett., Noct. f. 100; Herr Schäff. Schmett. Eur. ii. p. 328; Godt. Lép. Fr. v. p. 160, pl. 59; Steph. Ill. Brit. Ent., Haust. ii. 106; Staud. Cat. Lep. pal. p. 135.
Triphæna rufa, Tutt, Brit. Noct. ii. p. 92; Ter. Haar Tyds, 1896, Ver. p. 93, pl. i. f. 3.
Agrotis latimarginata, Röber. Ent. Nachr. 1900, p. 204.

Head and base of tegulæ creamy white, the rest of thorax brown pencilled with grey; palpi blackish at tips; antennæ brown above; pectus and legs creamy white, the tarsi with blackish bands; abdomen black-brown, the hair at sides and ventral surface rufous. Fore wing dark brown, thickly irrorated with purplish grey, more ochreous grey on inner medial area; an indistinct antemedial line slightly bent inwards to costa, where there is a dark point; orbicular and reniform moderate with, often incomplete, white annuli, the former oblique, the latter rather figure-of-8-shaped; the postmedial line oblique from costa to vein 4, then incurved and produced to slight streaks on the veins; an indistinct subterminal line angled outwards at vein 7 and excurved at middle, with a rufous patch before it at costa with three pale points on it; a fine brown terminal line. Hind wing orange-yellow, the basal area suffused with brown, on inner area extending to the terminal black band, which expands on costal area and has its inner edge excised at middle; the termen and cilia yellow. Underside of fore wing fuscous black, with the costal and terminal areas pale; hind wing with the costal area pale rufous.

Ab. 1. *rufa*. Fore wing with the ground-colour bright rufous.

Ab. 2. *latimarginata*. Smaller and darker, and with broader terminal band to hind wing.—Hartz Mts.

Hab. Britain; France; Germany, Zeller and Frey Colls.; Sicily; Algiers; Greece (*Merlin*); Russia, Livonia; Armenia; Asia Minor. *Exp.* 34–46 millim.

Larva. Meyr. Brit. Lep. p. 106; Barrett, Lep. Brit. iv. p. 10, pl. 138. f. 1. Pale greenish or ochreous, black-dotted; dorsal line pale, partly edged with short dark marks; two blackish spots on somite 12; sometimes a lateral series of oblique darker marks; spiracular line pale; head pale with dark markings. Food-plants: *Primula*, *Stellaria*, *Rubus*, etc. 9–5.

1080. Triphæna interjecta.

Noctua interjecta, Hübn. Samml. Eur. Schmett., Noct. pl. 23. f. 107 (1827); Herr.-Schäff. Schmett. Eur. ii. p. 328; Godt. Lép. Fr. v. p. 154, pl. 59. f. 1; Steph. Ill. Brit. Ent., Haust. ii. p. 105. 6; Staud. Cat. Lep. pal. p. 135.

Head and thorax yellow-brown or red-brown; palpi and legs grey-brown irrorated with white, the tarsi ringed with white; abdomen fuscous brown, the hair at sides, anal tuft, and ventral surface pinkish. Fore wing yellow-brown or reddish brown, the markings often almost obsolete; double, waved, subbasal and antemedial lines, the latter excurved below cell; orbicular and reniform faintly defined by fuscous; an indistinct medial shade; the postmedial line waved, oblique towards costa, excurved at median

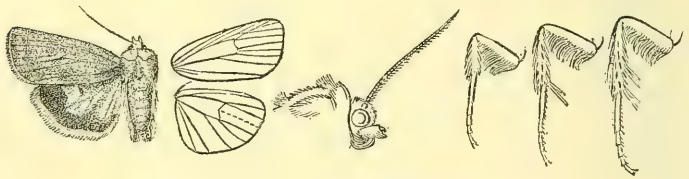


Fig. 114.—*Triphæna interjecta*, ♂. ½.

nervules, then incurved, and with some dark points beyond it on the veins; a diffused subterminal shade slightly angled outwards at vein 7 and incurved below vein 4; a terminal line and line through the cilia. Hind wing orange-yellow; the cell, costal and inner areas suffused with fuscous brown; a slight discoidal lunule; a broad black terminal band expanding on apical area and with sinuous inner edge; the termen and cilia yellow, with some fuscous on the latter towards apex. Underside of fore wing fuscous, with the costal and terminal areas brownish ochreous; hind wing with the costal area pinkish.

Hab. Britain; France; Germany, Zeller Coll.; Hungary, Frey Coll.; Spain; Corsica; Italy; Dalmatia. *Exp.* 36 millim.

Larva. Meyr. Brit. Lep. p. 106; Barrett, Lep. Brit. iv. p. 13, pl. 138. f. 2. Pale ochreous, dorsal and subdorsal lines whitish, brown-edged; spiracular line pale; dots black; head pale ochreous with dark markings. Food-plants: grasses, *Rumex*, *Primula*, etc. 9–5

1081. Triphæna rufipectus. (Plate LXXVI. fig. 29.)

Agrotis rufipectus, Morr. Proc. Bost. Soc. N. H. xvii. p. 165 (1874); Smith, Cat. Noct. N. Am. p. 51.

Head and tegulæ dark red-brown, the latter edged with white; thorax purplish grey; abdomen grey, the hair at sides, anal tuft, and ventral surface reddish brown. Fore wing purplish grey, sparsely irrorated with dark brown scales; a subbasal blackish line from costa to submedian fold; an irregularly waved antemedial line with point in cell before it; orbicular and reniform defined by brown, the former semicircular, open above, the latter with some fuscous in its lower extremity and oblique medial shade from it to inner margin; the postmedial line minutely waved and with some points on the veins beyond it, excurved from costa to vein 4, then incurved; the subterminal line with brownish shade on its inner side, angled outwards at veins 7 and 3, then incurved. Hind wing pale grey slightly irrorated with brown and the veins tinged with brown; the terminal area suffused with fuscous in female; the underside with distinct discoidal line and sinuous postmedial line.

Hab. Canada, Renfrew Co., 2 ♀, Br. Columbia; U.S.A., Northern and Eastern States, New York (*Hill*), 1 ♂, 1 ♀, Oregon, Colorado (*Walsingham*), 1 ♀, California, Los Angeles. *Exp.* 38–42 millim.

Larva. Dyar, Proc. Ent. Soc. Wash. iv. p. 316 (1899).

Head 1·5 millim., pale, heavily mottled with dark brown, forming a continuous band closely bordering the clypeus from vertex to mouth. Joint 12 rather distinctly enlarged. Body not heavily mottled with light and dark brown dottings, mixed with greenish laterally, forming dark obscure subdorsal oblique streaks and a distinct blotch on joint 13 anteriorly. All the ordinary lines lost except the dorsal, which is narrow, straight, sordid white, broken only in the incisures, sometimes edged with blackish there. Thoracic feet pale; spiracles dark. Feeds on grass.—H. G. D.

1082. Triphæna brunneicollis. (Plate LXXVI. fig. 30.)

Noctua brunneicollis, Grote, Proc. Ent. Soc. Phil. iii. p. 524, pl. 5. f. 5 (1864); Smith, Cat. Noct. N. Am. p. 51.

Head and tegulæ dark red-brown, the latter becoming black-brown at extremities; thorax grey or pale rufous pencilled with brown and with a few black scales; abdomen ochreous white, the anal tuft fulvous, the ventral surface irrorated with rufous. Fore wing grey, more or less strongly suffused with rufous and irrorated with a few black scales; a double subbasal line from costa to submedian fold, where there is a small black spot on its outer edge; a double, waved, antemedial line; orbicular and reniform defined by brown, the former round or elliptical; the postmedial line dentate and produced to dark points on the veins, bent outwards below costa, excurved to vein 4, then incurved; an indistinct subterminal line angled outwards at vein 7, excurved at middle, and with brown

patch on its inner side at costa. Hind wing pale yellowish, irrorated with brown except towards base and inner margin, and the veins tinged with brown; the underside with the costal area strongly irrorated with brown, a postmedial series of short streaks on the veins, distinct on costal area, and traces of a subterminal line.

Hab. CANADA; U.S.A., Northern, Eastern, and Middle States, Massachusetts, Vermont, N. York, Evans Centre, 3 ♂, Albany, Iowa, Nebraska, Kansas (*Snow*), 2 ♀, Colorado. *Exp.* 38–44 millim.

*1083. Triphæna hero.

Agrotis hero, Morr. Proc. Bost. Soc. N. H. xviii. p. 238 (1876); Smith, Cat. Noct. N. Am. p. 67.

Fuscous brown suffused with grey; tegulæ black at base, paler at extremities. Fore wing with the ante- and postmedial lines dark, the former defined on inner side, the latter on outer by pale colour; orbicular and reniform with grey annuli, the former somewhat V-shaped, open above, and with a black spot in cell before it; a distinct medial shade. Hind wing uniform dark brownish grey; a small discoidal spot; the underside brownish grey, with discoidal spot and postmedial line.

Hab. U.S.A., Massachusetts. *Exp.* 32 millim. This species is unknown to me.

1084. Triphæna crenulata. (Plate LXXVI. fig. 31.)

Agrotis crenulata, Smith, Proc. U.S. Nat. Mus. x. p. 451 (1887); Smith, Cat. Noct. N. Am. p. 56.

♂. Head dark brown mixed with black; palpi black, whitish at tips; thorax deep red-brown; tegulæ with white medial line and black tips; prothoracic crest tipped with grey, metathoracic crest rufous; legs blackish irrorated with grey; abdomen fuscous, the ventral surface irrorated with grey. Fore wing dark reddish brown, the basal area strongly and the postmedial area slightly suffused with grey; a waved black subbasal line from costa to submedian fold, with striga beyond it at costa, and deep black streak below the cell to the double oblique waved antemedial line; claviform small, defined by grey and black; orbicular and reniform brown, irrorated with white and with pale annuli, the former rounded, open above, the cell before and between the stigmata deep black; the postmedial line dentate and produced to points on the veins, defined by grey on outer side, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line brown, slightly irrorated with white, excurved at vein 7 and middle; a terminal series of dark points. Hind wing fuscous brown; the cilia whitish, brown at base; the underside fuscous grey, the costal area grey irrorated with brown, a dark discoidal spot and indistinct curved postmedial line.

Hab. U.S.A., Washington, Pullman, 1 ♂, Oregon, Portland, Utah, Nevada, 1 ♂, California. *Exp.* 38 millim.

Larva. Dyar, Proc. Ent. Soc. Wash. iv. p. 316 (1899).

Head 3·3 millim., pale, reticulated with brown, the curved band from the vertex distinct below and a brown patch in the clypeus; line upward from eye not more distinct than the other reticulations. Body brown, the ground-colour pale brown, finely striate, mottled with dark brown; dorsal line pale, narrow, nearly broken in the centres of the segments, edged with blackish brown in the incisures; subdorsal line more distinct, pale, narrow, extending over joints 3 to 12; oblique shades pale, but alternating anteriorly with somewhat wedge-shaped black patches that rest on the subdorsal line; sides finely mottled, obscurely streaked, the substigmatal line broad but very faint, sharp-edged; spiracles black-rimmed. A general feeder.—H. G. D.

1085. **Triphæna costata.** (Plate LXXVI. fig. 32.)

Agrotis costata, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 80 (1876); Smith, Cat. Noct. N. Am. p. 55.
Agrotis binominalis, Smith, Proc. U.S. Nat. Mus. x. p. 451 (1887).

♀. Head and thorax rufous; tegulæ black at tips; abdomen grey-brown, the sides and anal tuft rufous. Fore wing bright chestnut-brown; the costal area whitish, tinged with rufous to the postmedial line; the orbicular and reniform white, with some rufous and fuscous at centre and defined by black, the former open, **V**-shaped, its inner arm produced to base as a sinuous black streak below the pale costal area; a rather faint waved antemedial line; a dentate postmedial line bent outwards below costa, excurved to vein 4, then oblique; the subterminal line only defined by fuscous suffusion on terminal area from below apex to above tornus. Hind wing reddish brown, the cilia whitish; the underside greyer, irrorated with brown; a small discoidal spot and curved postmedial line.

Hab. Canada, Br. Columbia, Vancouver, 1 ♀ type; U.S.A., Washington Terr., California. *Exp.* 40 millim. The head and tegulæ of type wanting.

1086. **Triphæna exsertistigma.** (Plate LXXVII. fig. 1.)

Agrotis exsertistigma, Morr. Proc. Bost. Soc. N. H. xvii. p. 166 (1874); Smith, Cat. Noct. N. Am. p. 55.
Agrotis observabilis, Grote, Can. Ent. vii. p. 144 (1875).

Head black-brown mixed with grey; palpi black, white at extremity of 2nd and 3rd joints; tegulæ white, the extremities black; thorax purple-brown, a few of the scales tipped with white; legs black and grey. Fore wing dark grey suffused and irrorated with purplish black; the costal area pale to the postmedial line, the base of inner area pale; the subbasal line represented by double black strigæ from costa and median nervure with a blackish mark beyond it below the cell; the antemedial line double, waved, oblique, filled in with grey, interrupted below costa and strongly excurved above inner margin; claviform elongate, outlined with

whitish; orbicular and reniform fuscous defined by whitish, the former open V-shaped, its inner arm running back to antemedial line, the latter with pale centre, the area in cell before and between the stigmata and below the orbicular golden-brown or black-brown; the postmedial line double, minutely waved, bent outwards below costa, excurved to vein 4, then incurved, filled in with grey, and with series of black points on the veins beyond it; the subterminal line pale defined by black on inner side and with diffused blackish patch at costa, slightly angled outwards at vein 7 and excurved at middle; the terminal area paler grey; a terminal series of black points. Hind wing fuscous brown; the cilia whitish with brown line through them; the underside grey irrorated with brown; a small discoidal spot and curved postmedial line.

Hab. U.S.A., California, Yosemite Valley, 1 ♂, 1 ♀, type *observabilis*. *Exp.*, ♂ 34, ♀ 38 millim.

1087. **Triphæna confusa.** (Plate LXXVII. fig. 2.)

Agrotis exsertistigma, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 79, pl. 4. f. 8 (1876), nec Morr.
Agrotis confusa, Smith, Proc. U.S. Nat. Mus. x. p. 452 (1887); Smith, Cat. Noct. N. Am. p. 57.

♂. Head rufous and white; tegulæ white, with two pale brown bands irrorated with black, the tips deep red-brown; thorax bright rufous; abdomen fuscous grey; the anal tuft and ventral surface rufous. Fore wing deep rufous, the costal area ochreous to the postmedial line; the basal area with some black suffusion; a small subbasal black spot below cell, with curved ochreous fascia below it defined by black below to the double oblique waved antemedial line filled in with ochreous; claviform well developed, defined by whitish; orbicular and reniform brownish, with ochreous annuli defined by black, the former round, open above; the postmedial line double, minutely waved, with a series of black points on the outer line, slightly bent outwards below costa, incurved below vein 4; some pale points on costa towards apex; subterminal line greyish, slightly waved, defined by black suffusion on inner side; a terminal series of black points. Hind wing fuscous brown; the cilia whitish; the underside grey irrorated with fuscous, the costal area pale rufous irrorated with brown; a small discoidal black spot and indistinct sinuous postmedial line.

Hab. U.S.A., Oregon, Corvallis, 1 ♂. *Exp.* 42 millim.

1088. **Triphæna formalis.** (Plate LXXVII. fig. 3.)

Agrotis formalis, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 61 (1874); Smith, Cat. Noct. N. Am. p. 55.
Agrotis facula, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 82 (1876).
Agrotis insularis, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 82 (1876).
Agrotis emarginata, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 82 (1876).

Head grey and dark brown; tegulæ at base whitish, yellow-brown, red-brown, or purple-brown, the tegulæ with white medial

line and usually black tips; thorax with some of the scales sometimes grey-tipped; abdomen fuscous or brown; the ventral surface irrorated with grey. Fore wing grey-brown or reddish brown, the costal area to postmedial line grey or ochreous, or in the redder specimens rufous; the subbasal line double from costa to submedian fold, where there is a short black streak beyond it; a double obliquely waved antemedial line, more strongly excurved above inner margin; claviform usually present, elongate and defined by whitish; orbicular and reniform defined by whitish, the former open V-shaped, its inner arm running back to the antemedial line, the latter moderate, the cell before and below them and below the orbicular usually black; the postmedial line double, minutely waved, bent outwards below costa, excurved to vein 4, then incurved, and with series of black points on the veins beyond it; the subterminal line greyish, defined on each side by fuscous, slightly angled outwards at vein 7 and excurved at middle, with blackish patch before it at costa; a terminal series of black points usually present. Hind wing fuscous brown; the cilia whitish with brown line through them; the underside with discoidal spot and curved postmedial line.

A. Tegulæ black at tips.

a. Fore wing with black streak below base of cell.

Ab. 1. *facula*. Fore wing with the cell filled in with black.

Ab. 2. Fore wing with the cell not filled in with black.

b. *formalis*. Fore wing without black streak below base of cell.

B. Tegulæ with the tips concolorous.

Ab. 3. Fore wing with the cell filled in with black.

Ab. 4. Fore wing with the cell not filled in with black.

Hab. Canada, Br. Columbia, Vancouver, 1 ♀, type *insularis*; U.S.A., Washington Terr., 1 ♂, Oregon, The Dales, 1 ♀, Nevada, 1 ♀, California (*Walsingham*), 2 ♂, 1 ♀, Sanzalito, S. Joachim, 6 ♂, 2 ♀, type and types *facula* and *emarginata*. *Exp.* 36–38 millim.

*1089. **Triphæna vittifrons.** (Plate LXXVII. fig. 4.)

Noctua vittifrons, Grote, Proc. Ent. Soc. Phil. iii. p. 527, pl. 5. f. 6 (1864); Smith, Cat. Noct. N. Am. p. 54.

♀. Head and thorax ochreous mixed with black-brown; palpi whitish at tips; tegulæ whitish, pale rufous at tips; patagia fuscous; thorax fuscous and whitish; abdomen fuscous and grey. Fore wing fuscous; the costal area creamy white slightly irrorated with fuscous to beyond middle; orbicular and reniform indicated by slight creamy marks; subterminal line indistinct, pale, slightly angled outwards at vein 7 and excurved at middle; a slight terminal series of dark points; cilia with whitish line at base. Hind wing semihyaline white; the veins and terminal area slightly tinged with fuscous; the underside with the costal area irrorated with fuscous.

Hab. U.S.A., Colorado, Glenwood Springs (*Bruce*), in U.S. Nat. Mus. *Exp.* 34 millim.

1090. Triphæna carissima. (Plate LXXVII. fig. 5.)

Agrotis carissima, Harv. Grote's Check-List, 25 (1875); Smith, Cat. Noct. N. Am. p. 54.

♂. Head and thorax purple-red, a few of the scales tipped with white; palpi black, whitish at tips; tegulæ black at extremities; tarsi brown with pale rings; abdomen fuscous brown, greyish at base, tinged with purple at middle, and on ventral surface which is irrorated with white. Fore wing purple-red, irrorated and the terminal area tinged with fuscous; a double subbasal line from costa to submedian fold, excurved below costa; a double, waved, antemedial line angled outwards below costa; the orbicular and reniform indistinctly outlined with fuscous; a double, waved, postmedial line, bent outwards below costa, excurved to vein 4, then incurved; an indistinct pale subterminal line with some black points on its inner edge towards costa, and incurved at vein 2. Hind wing pale evenly suffused with brown; the cilia white at tips; the underside with small discoidal spot and curved postmedial line.

Hab. U.S.A., California, 1 ♂ type. *Exp.* 38 millim.

*1091. Triphæna bimarginalis. (Plate LXXVII. fig. 6.)

Agrotis bimarginalis, Grote, A. M. N. H. (5) xi. p. 53 (1883); Smith, Cat. Noct. N. Am. p. 54.

Head and thorax orange-brown to ferruginous; tegulæ greyish; abdomen fuscous grey, the anal tuft orange-brown. Fore wing deep brown, irrorated with ferruginous and with blackish shading; the costal area leather-brown or reddish yellow, black on postmedial area; the terminal area grey; the antemedial line sinuous; orbicular and reniform suffused with black; postmedial line even, slightly crenulate, with a series of points beyond it on the veins. Hind wing fuscous grey; the underside fuscous, with discoidal spot and diffused postmedial line.

Hab. U.S.A., New Mexico. *Exp.* 35–36 millim. This species is unknown to me; figured from a drawing from type in Brooklyn Inst. Arts & Sci.

*1092. Triphæna totonaca. (Plate LXXVII. fig. 7.)

Noctua totonaca, Schaus, Trans. Am. Ent. Soc. xxi. p. 226 (1894).

♂. Head and base of tegulæ pale rufous, the vertex rather dark; palpi at sides, spots at side of frons and on neck above black; thorax deep chocolate-brown; pectus and legs rufous; abdomen grey-brown, the hair at sides and ventral surface rufous. Fore wing black-brown, the costal area pale tinged with rufous to the postmedial line; the subbasal line represented by a black point below costa, the indistinct antemedial line by a black point below costa, then angled outwards and waved; the orbicular and reniform dark red-brown defined by black, the former minute, elongate, the cell filled in by black; the postmedial line minutely waved, excurved from cell to vein 4, then oblique; the subterminal line defined by

the area beyond it being purplish grey irrorated with brown, slightly angled outwards at vein 7 and excurved at middle; a terminal series of small dentate black spots. Hind wing pale suffused with brown, especially towards termen, the cilia pale with a brown line near base; the underside pale irrorated with brown, the costal area suffused with purple-red, a dark discoidal point and curved postmedial line.

Hab. Mexico, Jalapa, type † ♂ in Coll. Schaus. *Exp.* 40 millim.

1093. Triphæna undosa.

Agrotis undosa, Leech, P. Z. S. 1889, p. 501, pl. l. f. 3.

Head and thorax brown, more or less strongly suffused with grey and mixed with black, especially on head and tegulæ; abdomen brown; pectus, legs, and ventral surface of abdomen irrorated with black, the tarsi ringed with white. Fore wing grey-brown, suffused in parts with dark brown; a double subbasal line from costa to submedian fold; a double antemedial line slightly angled inwards in submedian fold and on vein 1; the medial area suffused with black from costa to median nervure, the inner area with some waved lines; claviform blackish and defined by black; orbicular and reniform defined by black, the former round; the postmedial line double, minutely waved, bent outwards below costa, excurved to vein 4, then incurved, and with a series of points on the veins beyond it; the subterminal line whitish, defined by fuscous suffusion before it and a black patch at costa, minutely dentate, angled outwards at vein 7 and excurved at middle; a terminal waved black line. Hind wing fuscous brown, blacker towards termen; the cilia pale yellowish; the underside greyish, the costal area irrorated with brown, a dark discoidal spot and sinuous postmedial line, the terminal area suffused with black.

Hab. Japan (*Pryer*), 1 ♂ type, Oiwake (*Leech*), 1 ♀, Nikko (*Leech*), 1 ♀. *Exp.* 40 millim.

1094. Triphæna mirabilis. (Plate LXXVII. fig. 8.)

Agrotis mirabilis, Grote, N. Am. Ent. i. p. 39 (1879); Smith, Cat. Noct. N. Am. p. 54.

♂. Head and thorax black mixed with grey, the latter with flesh-pink dorsal fascia; shoulders with white points at origin of fore wing; tarsi ringed with white; abdomen fuscous brown irrorated with grey. Fore wing black thickly irrorated with pale grey; the subbasal line represented by some black scales below the cell; the antemedial line indistinct, oblique, waved, and acutely angled outwards above inner margin; orbicular and reniform yellowish white, the former small, the latter moderate; a black streak in the cell from the antemedial line to the reniform; the postmedial line very indistinct, strongly bent outwards below costa and incurved below vein 4; an indistinct sinuous subterminal line, with diffused black patch on its inner side at costa, on which are some pale points; the terminal area somewhat greyer; a terminal

series of black points. Hind wing fuscous brown; the cilia grey with a brown line through them; underside with the costal area grey irrorated with black.

Hab. U.S.A., Colorado (*Snow*), 1 ♂ type, New Mexico, Arizona. *Exp.* 36 millim.

1095. Triphæna discoidalis. (Plate LXXVII. fig. 9.)

Agrotis discoidalis, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 82, pl. 4. f. 9 (1876); Smith, Cat. Noct. N. Am. p. 56.

♀. Head and thorax ochreous brown, with a few black scales on patagia; palpi black at sides, pale at tips; antennæ blackish; abdomen grey-brown; pectus, legs, and ventral surface of abdomen irrorated with dark brown. Fore wing grey irrorated with black; the costal area pale yellow-brown to the postmedial line; the subbasal line black, curved from costa to submedian fold, defined by pale brown on outer side and with a blackish mark beyond it on costa; the antemedial line double, irregularly dentate, more strongly inwards on vein 1; claviform with its extremity defined by black; orbicular and reniform greyish defined by black, the former small, elliptical, almost complete above, the latter incomplete below, the cell black before and between them; the postmedial line double, waved, bent outwards below costa, slightly incurved in discal fold and incurved below vein 4, the area between it and subterminal line suffused with fuscous, this line being minutely waved and slightly excurved at vein 7 and middle; a terminal series of black points. Hind wing pale brown, the cilia whitish with a brown line through them; the underside whitish irrorated with brown, an indistinct discoidal spot, sinuous postmedial line, and diffused subterminal line.

Hab. U.S.A., Oregon, Portland, Nevada, California, Sierra Nevada, 1 ♀ type. *Exp.* 36 millim.

1096. Triphæna placida. (Plate LXXVII. fig. 10.)

Agrotis placida, Grote, Ann. Lyc. Nat. Hist. N.Y. xi. p. 305 (1876); Smith, Cat. Noct. N. Am. p. 52.

Head and thorax dark brown, irrorated with a few whitish scales or mixed with grey; palpi whitish at tips; abdomen fuscous brown, the anal tuft tinged with fulvous; pectus, legs, and ventral surface of abdomen whitish irrorated with fuscous. Fore wing dark brown or rufous or grey, suffused in parts with rufous or dark brown, and with some black irroration; double, waved, subbasal and antemedial lines; orbicular and reniform with grey annuli defined by brown; a medial shade; the postmedial line double, minutely dentate and produced to slight points on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line grey, slightly angled outwards at vein 7 and excurved at middle, the area beyond it paler or grey; a terminal series of dark points. Hind wing fuscous brown, the cilia whitish at tips; the underside with discoidal lunule and curved postmedial line.

Hab. Canada, Renfrew Co., 2 ♂; U.S.A., Maine, New York, Lewis Co., 1 ♂ type, Utah, Nevada, Colorado (*Snow*), 1 ♂, 2 ♀, New Mexico, Arizona. *Exp.* 30–36 millim.

1097. Triphæna variata. (Plate LXXVII. fig. 11.)

Agrotis variata, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 83, pl. 4. f. 12 (1876); Smith, Cat. Noct. N. Am. p. 53.
Agrotis varix, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 83 (1876).
Agrotis orbis, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 83 (1876).

Head and thorax dark red-brown, irrorated with a few grey scales; palpi black, pale at tips; pectus, legs, and abdomen brown mixed with grey. Fore wing dark red-brown; double, waved, subbasal, antemedial, and postmedial lines filled in with grey, and with black points on each side of them at costa, the 1st ending at submedian fold, the 2nd oblique, the last bent outwards below costa, slightly incurved in discal fold and incurved below vein 3 and with grey points beyond it on the veins; the orbicular and reniform indistinctly defined by grey, the former small, round, the latter sometimes filled in with blackish; the subterminal line angled outwards at vein 7 and excurved at middle, the area beyond it pale grey; a terminal series of black points. Hind wing fuscous brown, the cilia whitish with brown line through them; the underside grey-brown irrorated with black, the costal area tinged with red; a black discoidal lunule and curved postmedial line.

Ab. 1. *orbis*. More uniform grey-brown.

Ab. 2. Ground-colour grey; hind wing paler.

Hab. Canada, Vancouver I., 1 ♀ type *varix*; U.S.A., Colorado, 2 ♀, Glenwood Springs, Nevada, California, Sierra Nevada, 2 ♂ type *orbis*. *Exp.* 40 millim.

1098. Triphæna alternata. (Plate LXXVII. fig. 12.)

Noctua alternata, Grote, Proc. Ent. Soc. Phil. iii. p. 526, pl. 5. f. 8 (1864); Smith, Cat. Noct. N. Am. p. 53.

Head and thorax ochreous or reddish brown, sometimes irrorated with fuscous; palpi rufous at sides, pale at tips; abdomen ochreous or reddish irrorated with black, thickly on dorsum, the hair at sides and anal tuft rufous. Fore wing greyish, more or less strongly tinged with chestnut or purplish red and irrorated with black; distinct double, waved, subbasal, ante- and postmedial lines, the 1st extending to submedian fold, the 2nd oblique, and the last bent outwards below costa, slightly incurved at discal fold and incurved below vein 4, with a series of points on the veins beyond it; orbicular and reniform defined by grey, the former oblique, elliptical, the latter with its lower part filled in with fuscous; the subterminal line angled outwards at vein 7 and excurved at middle, the area beyond it paler; a terminal series of black points. Hind wing fuscous brown, the cilia pale with a brown line through them; the underside reddish ochreous irrorated with black, a black discoidal spot and curved postmedial line.

Ab. 1. Fore wing suffused with black to the subterminal line.

Ab. 2. Fore wing more uniform grey-brown or dark brown.

Hab. Canada (*Norman*), 1 ♀ ; U.S.A., Northern and Middle Atlantic States to Mississippi, New York, Evans Centre, 5 ♂, 4 ♀, Washington, D.C., Illinois, Colorado (*Bruce*), 1 ♂. *Exp.* 40–44 millim.

Larva. Dyar, Proc. Ent. Soc. Wash. iv. p. 316 (1899).

Head 3 millim., pale, reticulated with brown, the curved band from vertex nearly contiguous to median suture, faint below, concentric with a narrower line that runs upward from the eye. Body heavily mottled with dark brown, subventral region and feet much paler; dorsal line whitish, very narrow, broken somewhat broadly in the incisures; oblique subdorsal shades dark, diffuse, paler-edged posteriorly; subdorsal line obsolete, just indicated by a paler shading; substigmatal band sharp above, defined by a white line undulating below the spiracles, mottled with reddish and shading into the pale subventral area; spiracles black-rimmed. Feeds on oak, hickory, etc.—H. G. D.

1099. **Triphæna anchocelioides.** (Plate LXXVII. fig. 13.)

Cerastis anchocelioides, Guen. Noct. i. p. 384 (1852); Smith, Cat. Noct. N. Am. p. 52.
Noctua cupida, Grote, Proc. Ent. Soc. Phil. iii. p. 525, pl. 5. f. 7 (1864).
Graphiphora velata, Wlk. xxxiii. 710 (1865).
Agrotis brunneipennis, Grote, Can. Ent. vii. p. 187 (1875).

Head and thorax red-brown irrorated with black; palpi black except at extremity; abdomen grey-brown, the hair at sides and anal tuft rufous, the ventral surface grey irrorated with black. Fore wing dull red-brown irrorated with black; indistinct double, waved, subbasal and antemedial lines; orbicular and reniform small, defined by black and with fuscous centres; the postmedial line double, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved, and with fuscous suffusion between it and the subterminal line, which is slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points usually present. Hind wing fuscous brown, the cilia whitish with brown line through them; the underside with discoidal spot and curved postmedial line.

Ab. 1. *brunneipennis.* Head, thorax, and fore wing deep purple-brown.

Ab. 2. *cupida.* Head, thorax, and fore wing bright chestnut, the last sometimes with broad black bands before the ante- and subterminal lines, or with the stigmata filled in with black, or with whitish annuli and no black on them.

Hab. Canada (*Norman*), 1 ♀, Vancouver Is., 1 ♀ type *velata*; U.S.A., Northern, Eastern, and Middle States, Massachusetts, New York, Trenton Falls, 1 ♀ type, 2 ♂, 4 ♀, Grote Coll., type *brunneipennis*, Washington, D.C., Illinois, Iowa, Nebraska, Colorado, New Mexico. *Exp.* 32–38 millim.

Larva. Marten, Trans. Dept. Agr. Ill. xviii. App. p. 136 (1880).

[No description.] Feeds on grape.—H. G. D.

1100. Triphæna minimalis. (Plate LXXVII. fig. 14.)

Agrotis minimalis, Grote, N. Am. Ent. i. p. 45 (1879); Smith, Cat. Noct. N. Am. p. 52.

♀. Head and thorax reddish chestnut slightly mixed with fuscous; palpi black, the extremity of 2nd joint grey; legs grey irrorated with rufous and black; abdomen grey, with the hair at sides and anal tuft rufous and the ventral surface irrorated with rufous. Fore wing chestnut-red slightly irrorated with black; a subbasal black line from costa to submedian fold; an oblique waved antemedial line; orbicular and reniform with pale annuli and some black on their lower extremities, the former oblique, elliptical, the latter placed on the medial shade which expands towards costa, where there is a black point; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique; a broad deep chestnut band before the subterminal line, which has a blackish spot at costa and is excurved below costa and at middle; a terminal series of black points; cilia dark brown. Hind wing fuscous brown, the cilia pale with brown line through them; the underside with discoidal spot and curved postmedial line.

Hab. U.S.A., Maine, Colorado (*Snow*), 1 ♀ type. *Exp.* 30 millim.

1101. Triphæna cupidissima. (Plate LXXVII. fig. 15.)

Agrotis cupidissima, Grote, Can. Ent. vii. p. 101 (1875); Smith, Cat. Noct. N. Am. p. 56.

♀. Pale ochreous brown, sometimes tinged with rufous; palpi rufous; abdomen at sides and anal tuft rufous; pectus, legs, and ventral surface of abdomen irrorated with black. Fore wing irrorated with black, sometimes very slightly, the markings fairly well-defined or almost obsolete; a double, waved, subbasal line from costa to submedian fold; a double, waved, oblique antemedial line; orbicular and reniform with pale outlines, the centres irrorated with black; the postmedial line indistinctly double, dentate and produced to points at the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line with some diffused black on its inner side at costa, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing fuscous brown, deeper towards termen; the cilia whitish with a brown line through them; the underside greyish irrorated with black, a discoidal spot and sinuous postmedial line.

Hab. U.S.A., California, Mendocino, Sanzalito, 4 ♀, type. *Exp.* 40 millim.

Larva. (Original.) Head 2·5 millim., shining pale brown, reticulate with dark brown, the curved vertical band and streak upward from eye broad and distinct. Body rather dark brown, finely mottled and dotted in dark brown on a cream-coloured ground, which appears dorsally on joints 5 to 12 in diffuse segmental patches widening the

narrow whitish dorsal line which is broken in the incisures; subdorsal line lost, indicated by a minute pale dot on anterior edge of each segment. Subdorsal oblique patches forming distinct triangular brown marks on joints 11 and 12, elsewhere obsolete, the one on joint 12 edged behind by a pale transverse line. Substigmatal band scarcely paler, sharply edged above by a dark shade, shading below into the subventral area. Cervical shield slightly darker than body; spiracles black-rimmed; tubercles blackish.—H. G. D.

1102. **Triphæna belfragei.** (Plate LXXVII. fig. 16.)

Rhynchagrotis belfragei, Smith, Bull. U.S. Nat. Mus. 38, p. 20 (1890); id. Cat. Noct. N. Am. p. 53.

♀. Head and thorax ferruginous brown; palpi black except at tips; pectus and legs black irrorated with grey; abdomen grey-brown irrorated with fuscous, the anal tuft ferruginous. Fore wing ferruginous brown, slightly irrorated with black; an indistinct double, curved, subbasal line from costa to submedian fold; an indistinct oblique waved antemedial line; orbicular and reniform very faint, the former round; postmedial line indistinct, double, punctiform, bent outwards below costa, excurved to vein 4, then incurved; subterminal line slightly defined by fuscous on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of points; cilia dull brown. Hind wing fuscous brown; the cilia grey, with brown line at base; the underside with the costal area rufous, irrorated with black, an indistinct discoidal spot, curved postmedial line, and traces of subterminal line.

Hab. U.S.A., Texas, 3 ♀. *Exp.* 42 millim.

1103. **Triphæna trigona.** (Plate LXXVII. fig. 17.)

Rhynchagrotis cupidissima, Smith, Bull. U.S. Nat. Mus. 38, p. 24 (1890), nec Grote.

Rhynchagrotis trigona, Smith, Cat. Noct. N. Am. p. 53 (1893).

Head and thorax red-brown, or grey-brown irrorated with a few dark scales; palpi black at sides, pale at tips; legs strongly irrorated with black, the tarsi black ringed with white; abdomen grey-brown, the anal tuft rufous, the ventral surface rufous irrorated with black. Fore wing red-brown or grey-brown, irrorated with black; an indistinct curved double subbasal line from costa to submedian fold; a double oblique waved antemedial line; orbicular and reniform with pale annuli, the former oblique, elliptical, the latter moderate; the postmedial line minutely waved and with some dark points beyond it on the veins, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line slightly angled outwards at vein 7 and excurved at middle, defined by fuscous on inner side and with a more or less prominent black patch before it at costa; a terminal series of black points. Hind wing fuscous brown, the cilia whitish with a brown line through them; the underside greyish irrorated with black, the costal area suffused with rufous, a dark discoidal spot and curved postmedial line.

Hab. Canada, British Columbia; U.S.A., Kansas, Douglas Co. (*Snow*), 1 ♂, 1 ♀. *Exp.* 40–44 millim.

*1104. **Triphæna inelegans.** (Plate LXXVII. fig. 18.)

Agrotis inelegans, Smith, Trans. Am. Ent. Soc. xvii. p. 43 (1890); Smith, Cat. Noct. N. Am. p. 54.

♀. Dull blackish brown; tegulæ tinged with reddish especially at tips; thorax, base of patagia, and pro- and metathoracic crests at tips reddish; abdomen fuscous. Fore wing with a slight reddish tinge at base of costa; the medial area slightly darker; the subbasal line double, black, distinct; antemedial line double, blackish, distinct, even, oblique, slightly excurved in interspaces; claviform faintly marked; orbicular and reniform moderate, with slight annuli of pale scales; postmedial line with double spot on costa, only defined by the slight contrast between the medial and postmedial areas, bent outwards below costa, excurved to vein 4, then incurved; subterminal line prominent, somewhat irregular, formed of white scales and almost continuous except towards costa and inner margin. Hind wing fuscous, the underside with dark irroration and tinged with reddish, a discoidal spot and interrupted postmedial line.

Hab. U.S.A., California, Sierra Nevada. *Exp.* 31 millim. This species is unknown to me; figured from a photograph from type in U.S. Nat. Mus.

1105. **Triphæna lætula.** (Plate LXXVII. fig. 19.)

Agrotis lætula, Grote, Bull. Buff. Soc. Nat. Sci. iii. p. 83 (1876); Smith, Cat. Noct. N. Am. p. 56.
Rhynchagrotis distracta, Smith, Bull. U.S. Nat. Mus. 38, p. 36 (1890).

♂. Head and tegulæ dark brown mixed with grey; palpi purplish red; thorax deep purple-brown; pectus, legs, and abdomen grey-brown irrorated with dark brown. Fore wing grey-brown suffused with purplish brown and strongly irrorated with black; a double black subbasal line from costa to submedian fold, excurved below costa, then oblique; an oblique double, waved, antemedial line; claviform defined by greyish; orbicular and reniform defined by grey, the former semicircular, open above, the latter moderate; the postmedial line indistinctly double, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line defined by greyish on inner side and some fuscous at costa, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing fuscous brown, the cilia whitish with a brown line through them; the underside greyer, irrorated with brown, a small discoidal spot and sinuous postmedial line.

Hab. U.S.A., Washington Terr., 2 ♂ type, Oregon, California (*Walsingham*), 1 ♂. *Exp.* 38 millim.

Genus **PRONOCTUA.**

	Type.
Pronoctua, Smith, Trans. Am. Ent. Soc. xxi. p. 44 (1894).....	*typica*.

Proboscis fully developed; palpi upturned, reaching vertex of head, the 2nd

joint broadly fringed with hair in front, the 3rd short, blunt, porrect; frons smooth; antennæ of male ciliated; head and thorax clothed with hair and scales, the latter with very slight spreading crests on pro- and metathorax; fore tibiæ fringed with hair; mid and hind tibiæ spined. Fore wing broad, the apex rounded, the termen somewhat crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the termen somewhat crenulate and excised at discal fold; veins 3, 4 from angle of cell; 5 obsolescent from middle of disco-cellulars; 6, 7 from upper angle.

A. Fore wing with the ground-colour brownish ochreous ... *typica.*
B. Fore wing with the ground-colour grey ..... *pyrophiloides.*

1106. Pronoctua typica.

Pronoctua typica, Smith, Trans. Am. Ent. Soc. xxi. p. 45, pl. iv. f. 1 (1894).

Pale brownish ochreous; palpi and frons suffused with fuscous; thorax irrorated with fuscous, the tarsi banded with black. Fore wing irrorated with black; a double, waved, subbasal line from costa to vein 1, with some fuscous suffusion between it and the double irregularly waved antemedial line, which is angled outwards below costa; orbicular and reniform with fuscous centres and ochreous annuli defined by blackish, the former somewhat elliptical, the latter partly obscured by the medial shade, which is oblique from costa to lower angle of cell, then waved, the cell between the stigmata blackish; a dentate postmedial line strongly bent outwards below

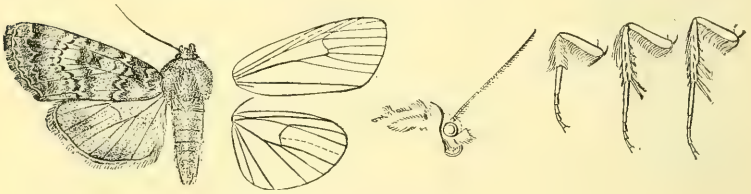


Fig. 115.—*Pronoctua typica*, ♂. $\frac{1}{1}$.

costa, excurved to vein 4, then incurved, and with traces of a line beyond it: the subterminal line ochreous, waved, angled outwards at vein 7 and excurved at middle, defined by fuscous suffusion before it and fuscous suffusion on terminal area; a terminal series of black points. Hind wing ochreous tinged with pale brown; the cilia yellowish. Underside of both wings pale, with curved dark postmedial line.

Hab. U.S.A., Colorado, Glenwood Springs, Chaffee Co., 7000 ft. (*Bruce*), 1 ♀. *Exp.* 48 millim.

1107. Pronoctua pyrophiloides. (Plate LXXVII. fig. 20.)

Agrotis pyrophiloides, Harv. Can. Ent. viii. p. 37 (1876); Smith, Cat. Noct. N. Am. p. 78.

♀. Head and thorax pale grey-brown mixed with darker brown; palpi fuscous at sides; tarsi blackish ringed with white; abdomen

grey-brown. Fore wing luteous grey, irrorated and more or less suffused with brown; a double, waved, brown subbasal line from costa to vein 1; a double, waved, antemedial line; orbicular and reniform very indistinctly defined by brown, the medial shade passing between them and bent inwards to costa; the postmedial line arising from a black point on costa, dentate and produced to pale points at the veins, bent outwards below costa, strongly angled inwards at vein 5 and outwards at vein 4, then oblique; a pale dentate subterminal line angled outwards at vein 7 and inwards in discal fold and with the area beyond it browner; a terminal series of black points. Hind wing fuscous brown, the cilia whitish with a brown line through them; the underside suffused with white except towards termen, an indistinct curved sinuous postmedial line.

Hab. U.S.A., California, 2 ♀. *Exp.* 42 millim.

Genus **EUERETAGROTIS.**

Type.

Eueretagrotis, Smith, Bull. U.S. Nat. Mus. 38, p. 47 (1890) ..... *sigmoides.*

Proboscis fully developed; palpi upturned, reaching vertex of head, the 2nd joint broadly fringed with hair in front, the 3rd well-developed and nearly naked; frons smooth; eyes large, round; antennæ of male typically ciliated; head and thorax clothed with hair and scales, the pro- and metathorax with well-developed spreading tufts; fore tibiæ broadly fringed with hair; mid and hind tibiæ spined; abdomen with some rough hair at base of dorsum. Fore wing usually broad, the apex rectangular; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the termen slightly excised at discal fold; veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked or from upper angle.

Sect. I. Antennæ of male with short fasciculate branches.

1108. **Eueretagrotis patricia.**

Agrotis patricia, Staud. Iris, viii. p. 312 (1895); id. Cat. Lep. pal. p. 151.

♂. Head and thorax red-brown mixed with grey, the head and tegulæ mostly black; palpi blackish, ochreous at tips; frons with black bar; pectus and legs blackish, the tarsi with pale rings; abdomen grey-brown, the ventral surface blackish. Fore wing

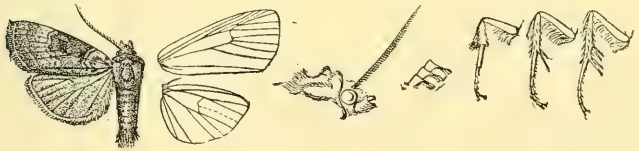


Fig. 116.—*Eueretagrotis patricia*, ♂. ½.

ochreous brown, the medial area to median nervure blackish, the inner medial area and terminal area purplish brown; the subbasal line double, waved, from costa to submedian fold; a double, slightly waved, obliquely curved antemedial line with some purplish brown before

it; claviform small, purplish black defined by black; orbicular and reniform defined by black and a few ochreous scales, the former rounded; an indistinct medial line from cell to inner margin; the postmedial line double, minutely waved, slightly angled outwards below costa and incurved at discal fold, strongly incurved below vein 4, a series of dark points on the veins beyond it; the subterminal line greyish, angled outwards at vein 7 and excurved at middle; a terminal punctiform black line and greyish line at base of cilia. Hind wing grey, suffused with fuscous brown; the cilia ochreous white, brownish at base; the underside grey, irrorated with fuscous, the costal and terminal areas suffused with fuscous, a slight discoidal lunule and postmedial line.

Hab. Tibet, Kuku-noor, 1 ♂, Amdo. *Exp.* 32 millim.

Sect. II. Antennæ of male serrate and fasciculate; fore wing rather narrow.

1109. Eueretagrotis agathina.

Agrotis agathina, Dup. Lép. Fr. vii. p. 359, pl. 122. f. 2 (1827); Herr.-Schäff. Schmett. Eur. ii. pl. i. f. 2; Staud. Cat. Lep. pal. p. 138.
Agrotis lidia, Boisd. Ind. Meth. p. 63 (1829); id. Icones, pl. 77. f. 1, nec Cram.
Graphiphora albimacula, Steph. Ill. Brit. Ent., Haust. ii. p. 137, pl. 19. f. 3 (1829).
Lytæa leucographa, Steph. Ill. Brit. Ent., Haust. ii. p. 199 (1829).
Agrotis scopariæ, Mill. Ic. ii. p. 151, pl. 67. ff. 7–10 (1864).
Agrotis hebridicola, Staud. Cat. Lep. pal. p. 138 (1901).

Head and thorax bright rufous; tegulæ with black line near base and whitish tips; tarsi blackish with pale rings; abdomen fuscous brown, the anal tuft and ventral surface rufous. Fore wing bright rufous; the veins slightly streaked with fuscous; the costal area whitish towards base; a black streak in base of submedian fold; the subbasal line represented by an oblique whitish striga from

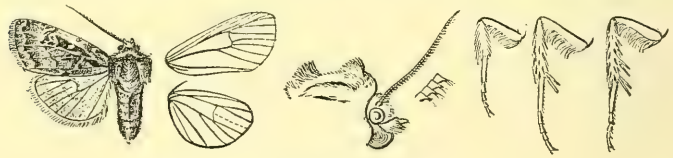


Fig. 117.—*Eueretagrotis agathina*, ♂. $\frac{1}{1}$.

costa; the antemedial line angled outwards below costa, in submedian fold, and more strongly above inner margin and inwards on median nervure and vein 1; claviform small, defined by black; orbicular and reniform whitish defined by black and with rufous centres, the former small, oblique or rounded, the cell before and between them with black fascia sometimes continued to postmedial line; the postmedial line dentate and produced to greyish points on the veins, bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; the subterminal line indistinct, pale, defined by dentate black marks on inner side

at middle, angled outwards at vein 7 and excurved at middle: a terminal series of white points at extremities of veins, with small blackish spots between them. Hind wing whitish suffused with fuscous brown; the cilia whitish; the underside whitish, the costal area irrorated with brown and tinged with rufous towards apex, a small discoidal spot, curved postmedial line, and terminal band.

Ab. 1. *hebridicola*. Fore wing paler and almost without rufous tinge.—Hebrides.

Ab. 2. *scopariæ*. Much darker, almost black.—France.

Hab. Britain, Leech Coll.; France, Frey & Sand Colls.; Belgium; N. Spain. *Exp.* 32–38 millim.

Larva. Meyr. Brit. Lep. p. 96; Barrett, Lep. Brit. iii. p. 359, pl. 133. f. 2.

Green or pinkish brown with darker irroration; dorsal line whitish with dark edges; subdorsal line whitish, black-edged above; spiracular line broader, ochreous white, sometimes dark-edged above; head pale yellow-brown with darker markings. Food-plants: *Calluna*, *Erica*. 9–6.

Sect. III. Antennæ of male ciliated; fore wing broad.

A. Fore wing with the cell filled in with black.
  a. Size large; thorax with the crests prominently pale ..... *sigmoides*.
  b. Size smaller; thorax with the crests more concolorous ... *perattenta*.
B. Fore wing with the cell not filled in with black.
  a. Fore wing without diffused brown in and below cell ..... *attenta*.
  b. Fore wing with diffused brown in and below cell ..... *fuscostigma*.

1110. Eueretagrotis sigmoides.

Noctua sigmoides, Guen. Noct. i. p. 325 (1852); Smith, Cat. Noct. N. Am. p. 60.

Head and tegulæ and patagia deep red-brown, largely mixed with black, the tegulæ deep black at extremities, and the tegulæ and patagia with pale edges above; vertex of thorax brownish grey; pectus, legs, and abdomen pale rufous irrorated with black. Fore wing ochreous suffused with rufous and fuscous brown; a diffused

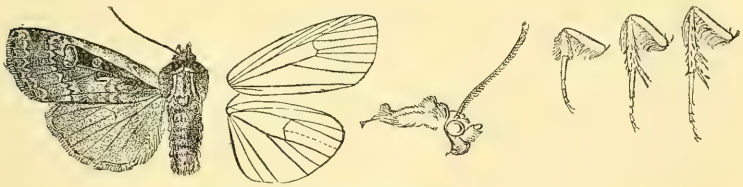


Fig. 118.—*Eueretagrotis sigmoides*, ♂. ½.

black streak below base of cell; a double subbasal line from costa to submedian fold sharply angled outwards below costa; a double, waved, antemedial line; claviform defined by black above; orbicular and reniform greyish or brownish, defined by black and with the cell before and between them black; the postmedial line double, dentate, bent outwards below costa, slightly incurved in discal fold, and

incurved below vein 4; a pale minutely dentate subterminal line angled outwards at vein 7 and excurved at middle, with some pale points and a black patch before it at costa; a terminal series of black points. Hind wing yellowish suffused wholly with red-brown; the cilia pale; the underside pale irrorated with brown, a dark discoidal lunule and sinuous postmedial line.

Hab. Canada (*Norman*), 1 ♂, 1 ♀; U.S.A., Northern, Eastern, Middle, and Central States, New York, Trenton Falls (*Doubleday*), 2 ♂ type, Evan's Centre (*Grote*), 5 ♂, 1 ♀. *Exp.* 44 millim.

Larva. Dyar, Proc. Ent. Soc. Wash. iv. p. 317 (1899).

Head 2·5 millim., rather dark brown, obscuring the brown reticulations and curved band from vertex, with a narrower line running upward from the eye. Body pale brown, somewhat pinkish or cream-colour; dorsal line narrow, pale, brown-marked and shortly broken in the incisures; subdorsal shades and lines scarcely perceptible; substigmatal line straight above, narrowly pale, edged with a dark line that runs through the centres of the spiracles (except on joint 12), broad, ill-defined below, and shading into the pale subventral area.

Probably a general feeder.—H. G. D.

1111. Eueretagrotis perattenta. (Plate LXXVII. fig. 21.)

Agrotis perattentus, Grote, Can. Ent. vi. p. 131 (1874); id. Ill. Essay, 51, pl. 1. f. 7; Smith, Cat. Noct. N. Am. p. 60.

Head and thorax reddish brown mixed with grey and slightly with black; palpi blackish at sides; tegulæ black at extremities; tarsi black ringed with white; abdomen grey, tinged with rufous towards extremity and on ventral surface. Fore wing grey, largely suffused with purple-brown; a diffused black streak below base of cell; a double subbasal line from costa to submedian fold, angled inwards in cell; a double oblique, irregularly waved antemedial line; claviform small, outlined with black; orbicular and reniform greyish, defined by black and with the cell before and between them black, the former rather small, nearly round; a minutely dentate postmedial line defined by grey on outer side, bent outwards below costa, slightly incurved in discal fold, and incurved below vein 4; the pale subterminal line with the area before it purple-brown and some pale points and blackish patch at costa, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing greyish irrorated with fuscous brown especially towards termen; a terminal series of dark striæ; underside more prominently irrorated, with dark discoidal lunule and sinuous postmedial line.

Hab. Canada, Renfrew Co., 2 ♂, 3 ♀; U.S.A., Northern and Eastern States to Mississippi and Texas, New York (*Doubleday*), 3 ♂, Evan's Centre (*Grote*), 1 ♂, 1 ♀ type, Kats Kills, 1 ♂. *Exp.* 40–42 millim.

1112. Eueretagrotis attenta. (Plate LXXVII. fig. 22.)

Agrotis attenta, Grote, Can. Ent. vi. p. 131 (1874); Smith, Cat. Noct. N. Am. p. 60.

Head, tegulæ, and patagia reddish brown, mixed with black; thorax grey; tarsi blackish with pale rings; abdomen grey irrorated with brown. Fore wing dull reddish brown mixed with grey; a black streak below base of cell; a double, waved, subbasal line from costa to submedian fold; an oblique double, waved, antemedial line; claviform small, slightly defined by black; orbicular and reniform defined by black with grey annuli and brown centres, the former round or elliptical; the postmedial line dentate and produced to points at the veins, bent outwards below costa, slightly incurved in discal fold and below vein 4; the subterminal line obscurely dentate, angled outwards at vein 7 and excurved at middle, the area beyond it rather greyer; a terminal series of black points. Hind wing grey tinged with brown; a terminal series of dark striæ; the underside with discoidal lunule and sinuous postmedial line.

Hab. Canada; U.S.A., Northern and Eastern States, Maine (*Packard*), 1 ♂ type, New York (*Doubleday*, *Bailey*), 1 ♂, 1 ♀. *Exp.* 40 millim.

1113. Eueretagrotis fuscostigma.

Noctua fuscostigma, Brem. Lep. Ost-Sib. p. 51, pl. 5. f. 10 (1864); Staud. Cat. Lep. pal. p. 138.
Graphiphora lubentia, Butl. A. M. N. H. (5) iv. p. 362 (1879).
Noctua hysgina, Oberth. Et. Ent. v. p. 76, pl. 7. f. 8 (1880).

Head and thorax purple-brown, the scales tipped with grey; palpi dark brown, pale at tips; tegulæ tipped with grey; legs blackish, the tarsi ringed with whitish; abdomen pale, the anal tuft fulvous. Fore wing purple-brown; a double subbasal line from costa to submedian fold, angled outwards below costa and with black point beyond it in cell and short streak below the cell; a double oblique antemedial line angled outwards below costa and excurved above inner margin; orbicular and reniform purple-fuscous slightly defined by grey, the former oblique, elliptical, the cell before and between them and the area below the cell suffused with dark olive-brown; the postmedial line double, minutely waved, bent outwards below costa, excurved to vein 4, then incurved; subterminal line pale, defined by brown marks on inner side and by a black bar and some points towards costa, slightly angled outwards at vein 7 and excurved at middle; a crenulate terminal line. Hind wing yellowish suffused with fuscous brown especially towards termen; the underside yellowish, with more or less fuscous on terminal area.

Hab. Amurland, 1 ♂, Askold I.; Japan, Yokohama (*Pryer*), 1 ♀, type *lubentia*, Tokio (*Maries*), 1 ♂, Oiwake (*Pryer*), 4 ♀, Hakodate (*Leech*), 1 ♀. *Exp.* 40–44 millim.

Genus RHYNCHAGROTIS.

Type.
Rhynchagrotis, Smith, Bull. U.S. Nat. Mus. 38, p. 13 (1890) ... *gilvipennis*.

Proboscis fully developed; palpi upturned, the 2nd joint moderately scaled in front, the 3rd naked; frons smooth; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with hair and scales, the latter without crests; mid and hind tibiæ strongly spined. Fore wing rather narrow, the apex rectangular; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

A. Hind wing with the terminal band slightly expanding on apical area and in submedian fold ..... *chardinyi*.
B. Hind wing with the terminal band broadly expanding on apical area and in submedian fold ..... *gilvipennis*.

1114. Rhynchagrotis chardinyi.

Triphæna chardinyi, Boisd. Ind. Meth. p. 94 (1829); Herr.-Schäff. Schmett. Eur. ii. p. 328, pl. 30. ff. 149, 150; Dup. Lép. Fr. Suppl. iii. p. 217, pl. 20. f. 3; Staud. Cat. Lep. pal. p. 135.
Triphæna hetæra, Eversm. Bull. Mosc. 1837, p. 34; Frey, Neue Beitr. Schmett. iii. pl. 279. f. 1.
Agrotis fuchsii, Wendl. Jarb. Nass. Verh. liv. p. 86 (1901).

Head, thorax, and abdomen clothed with grey and reddish-brown hair; palpi and front of pectus whitish; tarsi black with whitish rings; abdomen black with the anal tuft yellowish at tip. Fore wing reddish brown suffused with grey a subbasal dark striga

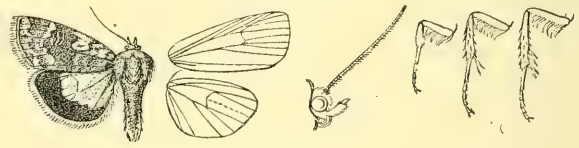


Fig. 119.—*Rhynchagrotis chardinyi*, ♂. ½.

from costa; the antemedial line indistinct, angled outwards below costa and inwards in cell and on vein 1; orbicular grey, oblique, elliptical; reniform rather small, outlined with grey; the post-medial line minutely dentate, excurved below costa and at median nervules, then incurved, and with more or less diffused grey beyond it; an irregularly waved grey subterminal line with diffused brown on its inner side; a fine brown terminal line and line through the cilia. Hind wing orange-yellow; the basal, costal, and inner areas irrorated with fuscous brown; a broad terminal black band with sinuous inner edge; cilia yellow. Underside of fore wing fuscous black, with yellow fasciæ on costa and median nervure, and the terminal area yellow.

Hab. Germany, E. Prussia; Centr. Russia, 1 ♂, 1 ♀, Frey Coll.; W. Siberia, Altai, 1 ♀; Mongolia; E. Siberia, 3 ♂, 1 ♀, Zeller Coll., Amur. *Exp.* 32 millim.

1115. **Rhynchagrotis gilvipennis.** (Plate LXXVII. fig. 23.)

Agrotis gilvipennis, Grote, 6th Rept. Peab. Acad. Sci., App. p. 24 (1874); Smith, Cat. Noct. N. Am. p. 51; Staud. Cat. Lep. pal. p. 136.

Head and thorax grey and fuscous brown, the latter sometimes tinged with rufous; tarsi blackish with pale rings; abdomen yellowish irrorated with fuscous and dorsally suffused with fuscous, leaving pale segmental lines on the terminal segments. Fore wing brown suffused with grey or ochreous; a subbasal striga from costa; a waved antemedial line; the orbicular and reniform with pale annuli defined by black, the former very oblique, elliptical, and with its lower extremity confluent with the rather small reniform; the postmedial line dentate, bent outwards below costa, excurved to vein 4, then incurved; the subterminal line greyish, irregularly sinuous, with diffused brown on its inner edge and a blackish patch with two pale points on it at costa; a fine terminal line. Hind wing orange-yellow; the basal, costal, and inner areas strongly suffused with fuscous black; a broad black terminal band expanding at apex and in submedian fold; cilia yellow. Underside of fore wing black, with slight yellow streak on median nervure and the marginal areas yellow.

Hab. Canada, Labrador, Anticosti, 1 ♂ ♀, type; U.S.A., Maine, Vermont, Andirondack Mts., Massachusetts, Buffalo, 1 ♀, New York. *Exp.*, ♂ 28, ♀ 34 millim.

Genus **PROTEUXOA**, nov.

Type, *P. amaurodes*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with hair; frons smooth; eyes smooth; head and thorax clothed with hair and scales, the latter with slight tufts behind tegulæ and on metathorax; hind tibiæ with one spine between the spurs. Fore wing with veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

Sect. I. Antennæ of male bipectinate to apex, with moderate branches.

*1116. **Proteuxoa mnioides.**

Agrotis mnoides, Lower, ined.

♂. Head and thorax grey mixed with dark brown; tarsal joints black with pale rings; abdomen pale brownish grey. Fore wing grey irrorated with fuscous; the subbasal line double, waved, black, from costa to vein 1; the antemedial line double, waved, angled outwards in cell and excurved above inner margin; claviform conical, black; orbicular and reniform grey, with whitish annuli and black outline, the former round, the latter moderate, some blackish suffusion in cell between them and beyond the latter; a waved medial line from lower angle of cell to inner margin; the postmedial line minutely waved, bent outwards below costa, excurved to vein 4, then oblique; some pale points on costa towards apex;

the subterminal line pale, slightly angled at veins 6 and 4, and with series of dentate black marks on its inner edge; a terminal series

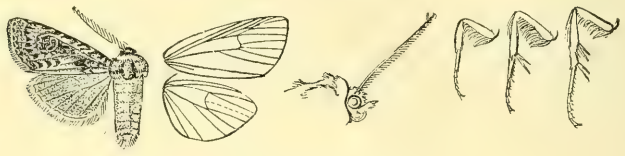


Fig. 120.—*Proteuxoa mniodes*, ♂. ½.

of black points; cilia with two brown lines through them. Hind wing fuscous grey.

Hab. N. S. Wales, Broken Hill, type † ♂ in Coll. Lower. *Exp.* 32 millim.

Sect. II. Antennæ of male ciliated.

1117. Proteuxoa amaurodes.

Agrotis amaurodes, Lower, ined.

Grey irrorated with fuscous; palpi with the 2nd joint blackish at sides; tegulæ with the basal half blackish. Fore wing with indistinct subbasal line from costa to submedian fold; an indistinct double, waved, antemedial line, more distinctly angled outwards below cell and above inner margin; orbicular represented by a brown-edged whitish point; a waved medial line angled outwards to lower angle of cell; a black discoidal lunule expanding below and with some ochreous or grey on its outer edges; the postmedial line indistinct, double, minutely dentate, bent outwards below costa, oblique below

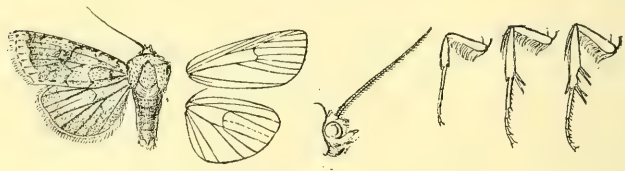


Fig. 121.—*Proteuxoa amaurodes*, ♂. ½.

vein 4, and angled inwards in submedian fold; the subterminal line angled outwards at vein 7 and excurved at middle, defined by fuscous suffusion on its inner side from costa to below middle; a terminal series of black points. Hind wing white, suffused with brown except in and just below and beyond cell; the veins brown; cilia white with a brown line through them; the underside white irrorated with black, a small black discoidal lunule, traces of a curved postmedial line and a large apical black patch extending to below vein 6.

Hab. Tasmania, Exeter (*Lower*), 1 ♂, 1 ♀. *Exp.* 38 millim. Type † in Coll. Lower.

Genus **PROPATRIA**, nov.

Type, *P. neuroides*.

Proboscis fully developed; palpi with the 2nd joint oblique and fringed with hair in front, the 3rd porrect; frons with large truncate conical prominence with corneous rim at extremity; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with hair and scales, the pro- and metathorax with spreading crests; tibiæ fringed with hair, the mid and hind tibiæ with a few spines. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 6 obsolescent from middle of disco-cellulars; 6, 7 shortly stalked.

A. Fore wing with the veins defined by dentate white streaks towards termen ..... *neuroides*.
B. Fore wing with the veins not defined by dentate white streaks towards termen ..... *mundoides*.

1118. **Propatria neuroides**.

Heliothis neuroides, Swinh. A. M. N. H. (7) viii. p. 128 (1901).

Head and thorax clothed with white, rufous, and black scales; abdomen ochreous, ventrally white irrorated with brown. Fore wing clothed with white, rufous, and brown scales; the veins with dark streaks defined by white; the discal and submedian folds with rufous streaks; an indistinct, slightly dentate, white and brown antemedial line; orbicular and reniform small, indistinct,

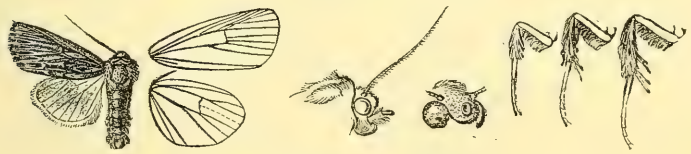


Fig. 122.—*Propatria neuroides*, ♂. ½.

with brown centres and white annuli defined by brown, the former elongate; postmedial line indistinct, bent outwards below costa, excurved to vein 4, angled inwards in submedian fold, then outwards on vein 1; a terminal series of black points; cilia intersected with white. Hind wing white, the veins and termen slightly tinged with brown in male, in female the terminal area suffused with brown; the underside with the costal area irrorated with brown.

Hab. W. Australia, Sherlock R. (*Clements*), 2 ♂, 4 ♀. *Exp.* 32 millim. Type † in Mus. Oxon.

1119. **Propatria mundoides**. (Plate LXXVII. fig. 24.)

Agrotis mundoides, Lower, ined.

Head and thorax clothed with dull rufous and dark brown scales tipped with grey; tarsi ringed with white; abdomen pale brown, the ventral surface white irrorated with brown. Fore wing dull

brown irrorated with white; dull rufous streaks in discal and submedian folds; the veins with slight black streaks towards termen; traces of a highly dentate antemedial line; claviform indistinctly defined by black; orbicular and reniform indistinct, with brown centres and whitish annuli defined by black, the former elliptical; the postmedial line somewhat dentate, bent outwards below costa, excurved to vein 4, angled inwards in submedian fold and outwards on vein 1; a terminal series of black points. Hind wing white; the veins and inner area tinged with brown; the terminal area fuscous from costa to below vein 2, more broadly in female; the underside with the costal area irrorated with brown.

Hab. N. S. Wales, Broken Hill (*Lower*), 5 ♂, 3 ♀; Victoria, Birchup (*Lyell*), 1 ♀; S. Australia, Adelaide (*Lyell*), 1 ♀. *Exp.* 38–42 millim.

Genus **ECTOPATRIA**, nov.

Type, *E. subrufescens*.

Proboscis fully developed; palpi porrect, extending to well beyond the frons, the 2nd joint fringed with hair, the 3rd moderate; frons with slight vertical ridges; eyes smooth; antennæ of male ciliated; head and thorax clothed with hair and scales, the latter with slight tufts behind tegulæ and on metathorax; hind tibiæ with one to three spines between the spurs. Fore wing with vein 3 from before angle of cell; 5 from above angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle.

A. Tegulæ black at base ..... *paurogramma.*
B. Tegulæ not black at base.
  a. Fore wing with the lines obsolete ..... *spilomata.*
  b. Fore wing with the lines developed.
    a^1. Fore wing with the ground-colour whitish.
      a^2. Fore wing tinged with rufous ..... *subrufescens.*
      b^2. Fore wing not tinged with rufous ..... *aspera.*
    b^1. Fore wing thickly irrorated with fuscous ..... *umbrosa.*

1120. **Ectopatria paurogramma.** (Plate LXXVII. fig. 25.)

Agrotis paurogramma, Lower, ined.

Head and thorax grey, strongly irrorated with dark brown; sides of frons and base of tegulæ black; tarsi black with pale rings; abdomen grey irrorated with brown. Fore wing grey, strongly irrorated with dark brown and black; slight black streaks in discal and submedian folds and on the veins towards termen; traces of a postmedial line bent outwards below costa, then obliquely curved. Hind wing whitish suffused with brown especially on terminal area.

Hab. W. Australia, Derby, 1 ♂, Sherlock R. (*Clements*), 1 ♀. *Exp.* 34 millim. Type † ♂ in Coll. Lower.

*1121. **Ectopatria spilomata.** (Plate LXXVII. fig. 26.)

Agrotis spilomata, Lower, ined.

♀. Head and thorax brownish ochreous mixed with white and dark brown; abdomen white irrorated with darker brown. Fore wing ochreous, suffused with red-brown and slightly irrorated with darker brown; the veins, cell, discal fold, and an oblique streak from upper angle of cell to costa before apex suffused with dark brown; the lines obsolete; claviform obsolete; orbicular and reniform white, the former small, oblique, the latter constricted at middle and with brown spots in its upper and lower parts; three white points on costa towards apex; a terminal series of dark points. Hind wing white, slightly tinged with brown especially on the veins.

Hab. Victoria, Blackwood, type † ♀ in Coll. Lower. *Exp.* 36 millim.

1122. **Ectopatria subrufescens.**

Agrotis subrufescens, Wlk. xxxii. 705 (1865).

♂. Head and thorax red-brown mixed with whitish and black scales; tarsi banded with black; abdomen white, tinged with brown

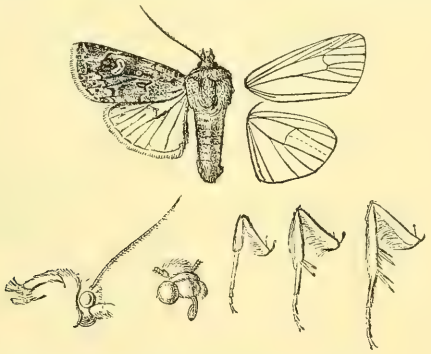


Fig. 123.—*Ectopatria subrufescens*, ♂. ½.

on dorsum, ventrally irrorated with fuscous. Fore wing whitish, suffused with ferruginous and irrorated with black; the subbasal line represented by black spots below costa and cell; a waved oblique antemedial black line defined by whitish on inner side; reniform small, slightly outlined with black; orbicular and reniform small, with rufous centres and whitish annuli defined by black, the former round, the latter constricted at middle; the postmedial line dentate, defined by whitish on outer side, bent outwards below costa, excurved to vein 4, then oblique and incurved in submedian fold; a whitish subterminal line angled outwards at vein 7 and excurved at middle, with a series of dentate black marks before it; a terminal series of black points; cilia whitish, with a black line through them. Hind wing semihyaline white, the veins and termen

tinged with fuscous; a fine terminal black line except towards tornus; the underside with the costal area irrorated with fuscous.

♀. Hind wing suffused with brown.

Hab. Australia (*Diggles*), 1 ♂ type; S. Australia, Alice Spring (*Lower*), 1 ♂. *Exp.* 36 millim.

1123. **Ectopatria aspera.** (Plate LXXVII. fig. 27.)

Hadena aspera, Wlk. xi. 601 (1857).
Xylina provida, Wlk. xv. 1737 (1858).
Xylina canescens, Wlk. xxxiii. 757 (1865).

♂. Head and thorax grey tinged with brown and irrorated with black; palpi with the 2nd joint blackish at sides; tegulæ with black medial line; tarsi banded with black; abdomen dorsally tinged with brown. Fore wing whitish, more or less tinged with brown and irrorated with fuscous; the subbasal line represented by black striæ below costa and cell; the antemedial line oblique, waved, defined by black on inner side; claviform elongate, defined by black; orbicular and reniform with brownish centres and grey annuli defined by black, the former small, nearly round, the latter constricted at middle; the postmedial line minutely dentate, defined by white on outer side, bent outwards below costa, excurved to vein 4, then oblique and angled inwards in submedian fold; an indistinct pale subterminal line angled outwards at vein 7 and excurved at middle, and with some dentate blackish marks on inner side; a terminal series of black points. Hind wing semihyaline white, the veins fuscous; the terminal area fuscous, broadly at costa, narrowing to a point at tornus; the underside with large black apical patch.

Hab. N. S. Wales, 1 ♂ type, (*Raynor*) 1 ♂; New Zealand, Auckland, 3 ♂, types *provida* and *canescens*. *Exp.* 38–40 millim.

1124. **Ectopatria umbrosa**, n. sp. (Plate LXXVII. fig. 28.)

♀. Head and thorax grey-brown, the scales tipped with grey; abdomen yellowish brown. Fore wing grey thickly irrorated with fuscous; the costa, discal and submedian folds with slight pale ochreous streaks; a waved black subbasal line from costa to submedian fold; a waved antemedial line slightly defined by grey on inner side; claviform indistinct, slightly defined by black; orbicular and reniform with brownish centres and grey annuli defined by black, the former elliptical, oblique, the latter constricted at middle; a waved medial line indistinct except below cell; a dentate postmedial line defined by grey on outer side, bent outwards below costa, excurved to vein 4, then oblique and angled inwards in submedian fold; the subterminal line represented by very indistinct dentate marks. Hind wing fuscous brown; the cilia white, with brown line at base except towards tornus.

Hab. Queensland (*Mathew*), 1 ♀ type. *Exp.* 40 millim.

Genus **PROTAGROTIS**, nov.

Type, *P. viralis*.

Proboscis fully developed; palpi with the 2nd joint oblique and moderately fringed with hair, the 3rd porrect; frons smooth; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with hair only and without crests; fore tibiæ fringed with hair, mid tibiæ without spines, hind tibiæ with one spine between medial and terminal spurs; abdomen with some rough hair at base of dorsum. Fore wing moderately broad, the apex not produced; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked or from cell.

Sect. I. Antennæ of male with long bristles and cilia.

1125. Protagrotis cuprea.

Gortyna cuprea, Moore, P. Z. S. 1867, p. 50, pl. 6. f. 8; Hmpsn. Moths Ind. ii. p. 173.

Head and thorax vinous red mixed with purplish fuscous, hairs tipped with grey; pectus more fulvous; abdomen purple-brown, with the anal tuft and ventral surface more fulvous. Fore wing orange thickly irrorated with fiery red, the costal area, cell, and postmedial area suffused with purplish fuscous; the veins with dark streaks; the subbasal line red, indistinct, waved from costa to submedian fold; the antemedial line red, waved, strongly excurved below cell; claviform large, defined by red; orbicular and reniform

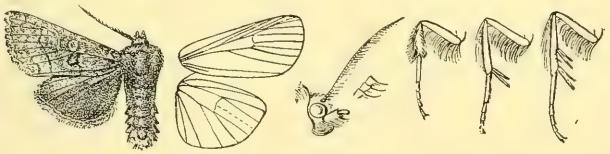


Fig. 124.—*Protagrotis cuprea*, ♂. ½.

large, defined by red, the former oblique, elliptical, or nearly round; an indistinct oblique waved line from lower angle of cell to inner margin; the postmedial line dark, bent outwards below costa, oblique below vein 4; a dentate orange subterminal line slightly defined by brown on inner side, angled outwards at vein 7 and inwards at discal and submedian folds; a fine dark waved terminal line. Hind wing fuscous brown; the costal area ochreous; the cilia pinkish rufous. The underside ochreous suffused with purplish pink; hind wing with sinuous postmedial line.

Hab. Sikhim (*Atkinson*), 1 ♂ cotype, (*Dudgeon*) 1 ♀. *Exp.*, ♂ 40, ♀ 44 millim.

Sect. II. Antennæ of male with short cilia.

1126. Protagrotis viralis.

Agrotis viralis, Grote, Bull. Geol. Surv. vi. p. 260 (1880); Smith, Cat. Noct. N. Am. p. 132.

♂. Head and thorax pale red-brown mixed with grey; abdomen pale red-brown, whitish towards base. Fore wing whitish, largely suffused with pale red-brown, the veins whitish; a short black streak below base of cell and an oblique subbasal streak from inner margin to vein 1; antemedial line obsolete; a brown patch above middle of vein 1, with two black streaks on its upper edge on each side of submedian fold; orbicular and reniform whitish, the former small, narrow, oblique, the latter with darker centre, some brown

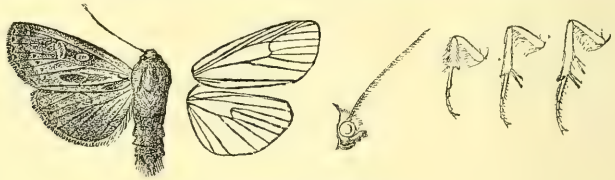


Fig. 125.—*Protagrotis viralis*, ♂. ½.

suffusion in cell before and between them; postmedial line almost obsolete, bent outwards below costa, excurved to vein 4, then oblique; subterminal line pale, angled outwards at vein 7, dentate at veins 3, 4, with some small dentate black marks on its inner side at middle and the area beyond it darker; a terminal series of black points. Hind wing whitish suffused with brown, and with the terminal area darker. Underside more ochreous; hind wing with black discoidal point.

♀. Thorax mixed with black; fore wing suffused with black and with the black markings more prominent.

Hab. U.S.A., Nebraska, 1 ♂ type, Colorado (*Cockerell*), 1 ♀. *Exp.*, ♂ 40, ♀ 46 millim.

ADDENDA AND CORRIGENDA.

Page 45.

56. **Chloridea** *armigera* insert *Bombyx* **obsoleta**, Fabr. Ent. Syst. 3. i. p. 456 (1793), which has precedence.

Page 58.

*73 *a*. **Thyreion patagonica.** (Plate LXIX. fig. 23.)

Heliothis patagonicus, Berg, Bull. Mosc. 1875, p. 220.

♂. Head and thorax pale rufous; pectus and legs whitish, the latter tinged with fuscous; abdomen whitish, dorsally tinged with fuscous. Fore wing whitish suffused with pale olive; the median nervure, vein 1, and the veins beyond the cell streaked with white; the costa, inner margin, and postmedial area irrorated with brown; ante- and postmedial lines obsolete; claviform well-developed, brown, connected with base by a streak below the cell; orbicular obsolete; reniform a very irregular brown patch extending to below cell and interrupted by the white streak on median nervure; subterminal line white, very slightly angled outwards at vein 7 and excurved at middle; some minute black points on termen. Hind wing whitish tinged with brown; the terminal area brown with diffused inner edge; a diffused brown discoidal spot; cilia white, brownish at base; the underside white, with diffused discoidal spot and terminal band from vein 4 to tornus.

Fore tibiæ with one long claw and four very short ones on outer side, one claw and two spines on inner.

Hab. Patagonia, Carmen, type † ♂ in Mus. Buenos Ayres. *Exp.* 28 millim.

Page 78. 113. **Schinia lucilinea.**

♂. Fore tibiæ with long curved claw on inner side and short claw on outer. Jamaica, in Coll. Schaus.

Page 81.

*121 *a*. **Schinia eximia.** (Plate LXIX. fig. 24.)

Heliothis eximius, Berg, Bull. Mosc. 1875, p. 218.

♂. Head and thorax dark brown mixed with grey-white; abdomen greyish fuscous. Fore wing with the area to postmedial line whitish, tinged with rufous and irrorated with dark brown; subbasal line blackish, defined by white on outer side, waved from costa to submedian fold; antemedial line oblique, waved, blackish defined by white on inner side; claviform moderate, blackish; orbicular and reniform rufous defined by blackish, the former round, conjoined to antemedial line; postmedial line black defined by white on outer side, bent outwards below costa, excurved to vein 4, then

incurved and angled outwards on vein 1; postmedial area blackish, terminal area pale reddish brown, the subterminal line defined by the difference between them, slightly angled outwards at vein 7 and excurved at middle; cilia chequered fuscous and whitish. Hind wing whitish, the basal area and a broad terminal band brown, confluent on inner area and conjoined to a brown discoidal lunule; cilia white, brown at base from apex to vein 2.

Fore tibiæ with one claw and two spines on inner side, four claws on outer.

Hab. Patagonia, Carmen, type † ♂ in Mus. Buenos Ayres. *Exp.* 28 millim.

Page 130.

*229 *a*. **Isochlora xanthiana.** (Plate LXXVIII. fig. 5.)

Isochlora xanthiana, Staud. Iris, viii. p. 320 (1895); id. Cat. Lep. pal. p. 223.

♂. Head and thorax ochreous; palpi, lower part of frons, pectus, and legs rufous; abdomen ochreous tinged with rufous especially on ventral surface. Fore wing yellow; a waved rufous subbasal line from costa to submedian fold; antemedial line rufous, oblique, strongly and rather irregularly dentate; orbicular represented by a slight oblique rufous striga; reniform a small fuscous lunule; a broad rufous shade beyond the cell extending to the antemedial line at submedian fold and inner margin; postmedial line sinuous and produced to slight points on the veins, slightly incurved at discal fold and strongly below vein 4; a subterminal series of small rufous lunules slightly angled outwards at vein 7 and excurved at middle; a fine rufous terminal line; cilia rufous. Hind wing ochreous tinged with rufous, a fine rufous terminal line; the underside more strongly suffused with rufous, a fuscous discoidal lunule and indistinct sinuous postmedial line.

Hab. Tibet, Amdo, Sinin Mts., in Coll. Püngeler. *Exp.* 50 millim.

Page 133. 235. **Agrotiphila staudingeri** del. *Agrotis montana.*

Page 136. 240. **Orosagrotis** *rigida* insert *Agrotis* **montana**, Morr. Ann. Lyc. Nat. Hist. N. Y. xi. p. 95 (1875), which has precedence.

Page 140.

245 *a*. **Porosagrotis caffra**, n. sp. (Plate LXXVII. fig. 29.)

♂. Antennæ bipectinate, with long branches to apex.

Head and thorax reddish brown mixed with grey-white; abdomen ochreous. Fore wing grey tinged with brown and slightly irrorated with fuscous; the costal area suffused with fuscous to beyond middle; a blackish streak in cell from middle to extremity continued in discal fold indistinctly to termen; an obsolescent streak in sub-

median fold; subbasal line represented by black striæ from costa and median nervure, defined by whitish on outer side; antemedial line represented by a black striga from costa defined by whitish on inner side and by a double line from median nervure, slightly angled outwards in submedian fold and strongly above inner margin; claviform elongate, defined by black and filled in with fuscous; faint traces of small black-defined orbicular and reniform stigmata on the black fascia in cell; postmedial line hardly traceable, minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; subterminal line represented by an indistinct series of small dentate dark marks; some fuscous suffusion on termen above middle. Hind wing yellowish white; the underside with traces of diffused postmedial line from costa to vein 6.

Hab. Natal, Mooi R., 1 ♂ type. *Exp.* 40 millim.

Page 152.

268 *a*. **Micragrotis microstigma**, n. sp. (Plate LXXVIII. fig. 10.)

♂. Head and thorax black slightly mixed with grey; tarsi with pale bands; abdomen grey mixed with fuscous, the anal tuft ochreous. Fore wing pale brown thickly irrorated and suffused with black especially on costal area; an indistinct irregular subbasal line from costa to submedian fold, with some pink beyond it at costa and on each side of it below the cell; an indistinct antemedial line slightly defined by pinkish on inner side; claviform represented by a slight black streak with some pink above it; orbicular and reniform very small, round, with pink centres defined by black; faint traces of a postmedial line slightly defined by pinkish on outer side, bent outwards below costa, excurved to vein 4, then oblique, some pale points beyond it on costa; subterminal line represented by some very indistinct dentate dark marks; cilia chequered pink and fuscous. Hind wing yellowish white, the costal area tinged with fuscous, a fine black terminal line; the underside with the costal area irrorated with fuscous, a small discoidal spot and postmedial series of striæ on the veins.

Hab. Mashonaland, Salisbury (*Dobbie*), 1 ♂, type. *Exp.* 16 millim.

268 *b*. **Micragrotis prosarca**, n. sp. (Plate LXXVIII. fig. 11.)

Head and thorax black; tarsi with pale rings; abdomen ochreous white, the ventral surface blackish except medially towards extremity. Fore wing black suffused with blue-grey; the costal area flesh-pink, at base extending to just below cell; a black streak below base of cell; the cell filled in with black; orbicular a white point; reniform very small, with fuscous centre and blue-grey annulus defined by black; traces of a highly dentate postmedial line, bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by slight diffused blackish; black

streaks from cell to termen above veins 4, 5, 6; a terminal series of small black lunules. Hind wing pure white; the underside with the costal area suffused with fuscous.

Hab. Mashonaland, Salisbury (*Dobbie*), 2 ♂, 1 ♀, type. *Exp.* 26 millim.

Page 153, under *Euxoa* insert (syn.) *Paragrotis*, Pratt, Can. Ent. xv. p. 4 (1883) ..... type *mœrens*.

Page 173.

298 *a*. **Euxoa hemispherica**, n. sp. (Plate LXXVIII. fig. 6.)

♂. Head and thorax grey mixed with fuscous and with pale brown on head and tegulæ; palpi blackish at sides; tegulæ with black medial line; tarsi with pale rings; abdomen brownish grey. Fore wing brownish grey irrorated with brown and fuscous; subbasal line double, from costa to submedian fold, to which it is incurved; antemedial line double, the inner line indistinct, angled outwards below costa and in cell and more strongly above inner margin, excurved below cell; claviform very slightly defined at extremity; orbicular and reniform grey defined by black, the former oblique, elliptical, open above; postmedial line dentate, bent outwards below costa, excurved to vein 4, then oblique; subterminal line angled outwards at vein 7, then represented by a series of small whitish dentate marks, and excurved at middle, defined by brownish on inner side especially towards costa; a terminal series of small black lunules. Hind wing white, the veins and terminal area suffused with brown; a brown line through the cilia; the underside with the costal and terminal areas irrorated with brown, a slight discoidal point.

Hab. Cyprus Mts. (*Miss D. M. A. Bate*), 1 ♂ type. *Exp.* 40 millim.

Page 177, for *æquicuspis* read *fissa*.

Page 190, for **Euxoa æquicuspis** read

327. **Euxoa fissa.** (Plate LXI. fig. 8.)

Agrotis fissa, Staud. Iris, viii. p. 356, pl. 6. f. 4 (1895); id. Cat. Lep. pal. p. 149.

Page 196, for *farinosa* read *vigurœa*.

Page 207.

343 *a*. **Euxoa cinereopallida.** (Plate LXXVIII. fig. 16.)

Carneades cinereopallidus, Smith, Can. Ent. xxxv. p. 10 (1903).

Whiter and less yellow than *E. recula*, the orbicular oblique, oblong, or rectangular, instead of rounded.

Hab. U.S.A., Oregon, 3 ♂, 1 ♀, Utah, Stockton, Nevada, 1 ♂, 1 ♀, California (*Walsingham*), 1 ♂, 1 ♀. *Exp.* 28 millim. All the specimens catalogued under *E. recula*, except the type ♀, belong to this species.

Page 227, for **Euxoa farinosa** read

391. **Euxoa viguræa.** (Plate LXII. fig. 30.)

Agrotis viguræa, Püng. ined.

The only locality recorded is Aksu.

Page 232. 403. **Euxoa tronella.**

Carneades tronellus, Smith, Can. Ent. xxxv. p. 11 (1903).

Page 272, Euxoa opipara. The specimen from Norway is certainly this species, but it is very doubtful if it is *Agrotis norwegica*.

Page 321.

568 *a*. **Euxoa rufomixta**, n. sp. (Plate LXXVIII. fig. 14.)

♂. Head and thorax purplish red mixed with black, the vertex of head ochreous; frons with black bar; tegulæ with medial black line and fuscous tips; tarsi black with whitish rings; abdomen ochreous tinged with fuscous, the ventral surface rufous. Fore wing purplish red suffused with fuscous except on inner area; an indistinct double, waved, subbasal line from costa to subcostal fold; a double, waved, antemedial line; claviform represented by a few black scales; orbicular rather small, round, defined by black at sides only; reniform with black bar on inner side and spot on outer; postmedial line rather strongly dentate, interrupted, bent outwards below costa and incurved below vein 4, some pale points beyond it on costa; the pale subterminal line only traceable towards costa; a terminal series of minute black lunules; cilia purplish red. Hind wing white; the cilia tinged with ochreous; the underside with the costal area irrorated with brown, a small discoidal spot and some postmedial striæ on the veins.

Hab. C. Colony, Kokstad (*Mrs. Pringle*), 1 ♂, type. *Exp.* 30 millim.

Page 324.

573 *a*. **Euxoa ruficeps**, n. sp. (Plate LXXVIII. fig. 12.)

♀. Head rufous, the palpi with some dark brown; tegulæ rufous at base, with dark medial line and grey tips; thorax grey; abdomen dull brown, the ventral surface blackish irrorated with grey, the extremity rufous. Fore wing grey irrorated with fuscous; a slight black streak below base of cell; subbasal line represented by double black striæ from costa; antemedial line double, very

highly dentate; orbicular and reniform small, with fuscous centres and grey annuli defined by black, the former round; postmedial line unusually near termen, double, highly dentate, very strongly bent outwards below costa and oblique below vein 4, some pale points beyond it on costa; terminal area with dark streaks on the veins defined on each side by rufous, becoming pale at the subterminal line, which is obsolete towards costa and dentate to near termen at veins 4, 3. Hind wing pure white; the cilia yellowish; the underside with the costal area irrorated with fuscous.

Hab. Mashonaland, Salisbury (*Dobbie*), 1 ♂, type. *Exp.* 36 millim.

Page 354, no. 627. **Feltia annexa** insert (syn.) *Agrotis interferens*, Wlk. xv. 1699 (1858).

Page 450. 771 *a*. **Agrotis semidolens.**

Agrotis semidolens, Wlk. xi. 739 (1857); Druce, Biol. Centr.-Am., Het. i. p. 286, pl. 27. f. 13.

Head and thorax grey, more or less strongly mixed with fuscous, the tegulæ and patagia sometimes edged by pale rufous; palpi black except at tips; tarsi black, ringed with white; abdomen grey, dorsally suffused with fuscous, the anal tuft tinged with rufous. Fore wing grey, more or less thickly striated with fuscous, the striæ forming more or less confluent patches on costa before and at middle and towards apex and on middle of inner area, the costal patches and some other parts of wing slightly tinged with pale ferruginous; reniform represented by an indistinct dark lunule; a terminal series of black points. Hind wing white, the veins, costal and inner areas, and a terminal line suffused with dark brown; cilia white, with a brown line through them; the underside with the costal area irrorated with fuscous, a small discoidal spot, a diffused postmedial line on costal area, and some points on costa towards apex.

Hab. Mexico, Coatepec (*Brooks*), 1 ♂; Guatemala, Vera Paz (*Champion*), 2 ♀; Panama, Bugaba (*Champion*), 1 ♂; Colombia, Bogotá (*Stevens*), 1 ♂ type; Brazil, 1 ♂, Amazons. *Exp.* 46–54 millim.

Page 454.

778 *a*. **Agrotis ecstrigata**, n. sp. (Plate LXXVIII. fig. 13.)

♂. Head and thorax black; abdomen grey tinged with fuscous. Fore wing ochreous suffused with purplish red and fuscous especially on costal and medial areas; the basal area more ochreous, the terminal area ochreous with fine black streaks on the veins and broader streaks in the interspaces; an indistinct double, waved, antemedial line filled in with greyish; orbicular and reniform very small, defined by black, open above and below, the former round; faint traces of a double, waved, postmedial line, bent outwards below costa, excurved to vein 4, then oblique; the streaks in interspaces

of terminal area ending in black lunules; cilia chequered fuscous and whitish. Hind wing pure white; the underside with the costal area tinged with fuscous.

Hab. Mashonaland, Salisbury (*Dobbie*), 1 ♂, type. *Exp.* 28 millim.

Page 467, under **Episilia** insert (syn.) *Netrocerocora*, Bart. Iris, 1902, p. 207 ..... type *coraxa*.

Page 470. 806. **Episilia** *oblongula* insert *Rusine* **coraxa**, Püng. Soc. Ent. xiii. p. 58 (1898), which has precedence.
Netrocerocora quadriplaga, Bart. Iris, 1902, p. 207.

Page 562.

975 *a*. **Lycophotia ecvinacea**, n. sp. (Plate LXXVIII. fig. 15.)

♂. Head and thorax leaden grey; palpi purplish red except 3rd joint; thorax dorsally slightly tinged with purplish red; tibiæ purplish red in front; abdomen grey-white. Fore wing leaden grey; the subbasal line represented by two purplish-red spots on costa and some scales below cell, the antemedial line by a spot on costa; orbicular and reniform moderate, indistinctly defined and placed on a diffused purplish-red patch, the former round and with spot on costa above it; postmedial line represented by two spots on costa, then indistinct, punctiform, bent outwards below costa, excurved to vein 4, then incurved; terminal area suffused with purplish red with slight dark streaks on the veins; cilia grey with a fine white line through them. Hind wing pure white; the underside with the costal area irrorated with grey.

Hab. C. Colony, Kokstad (*Mrs. Pringle*), 1 ♂, type. *Exp.* 38 millim.

List of unrecognized Species.

Melicleptria kasloa, Smith, Trans. Am. Ent. Soc. xxix. p. 208 (1903) ..... Br. Columbia.
Anthœcia saturata, Wlk. Char. Undescr. Het. p. 37 (1869). Type lost ..... Hab.?
Heliothis olivaria, Græser, Berl. ent. Zeit. 1888, p. 365; Staud. Cat. Lep. pal. p. 221 ..... Amurland.
Erythrophaia suavis, Staud. Stett. ent. Zeit. 1888, p. 44; id. Cat. Lep. pal. p. 224..... W. & E. Turkestan.
Manruta elingua, Smith, Trans. Am. Ent. Soc. xxix. p. 205 (1903). Arizona.
Carneades maimes, Smith, Can. Ent. xxxv. p. 131 (1903). Canada.
,, *masculinus*, Smith, J. N.Y. Ent. Soc. xi. p. 6 (1903). Washington, Utah.

Carneades focinus, Smith, J. N.Y. Ent. Soc. xi. p. 7 (1903). Canada, Washington, Colorado.

„ *rumatana*, Smith, Trans. Am. Ent. Soc. xxix. p. 203 (1903) ..... Dakota.

Agrotis bipartita, Græser, Berl. ent. Zeit. 1888, p. 318; Staud. Cat. Lep. pal. p. 136 ..... E. Siberia.

„ *mœrens*, Staud. Iris, ix. p. 365, pl. 4. f. 3 (1896); id. Cat. Lep. pal. p. 139. ? *Agrotis* near *rectangula*. Mongolia.

„ *sulcifera*, Christ. Iris, vi. p. 91 (1893); Staud. Cat. Lep. pal. p. 140. ? near *Euxoa tritici* ..... Armenia.

„ *dewitzi*, Græser, Berl. ent. Zeit. 1888, p. 316; Staud. Cat. Lep. pal. p. 140 ..... Amurland.

„ *glebosa*, Staud. Iris, xii. p. 359, pl. 6. f. 5 (1899); id. Cat. Lep. pal. p. 141. ? *Euxoa* near *tritici*. Asia Minor.

„ *cicatricosa*, Græser, Berl. ent. Zeit. 1892, p. 218; Staud. Cat. Lep. pal. p. 141. ?=*Agrotis melancholica*. Amurland.

„ *nomas*, Ersch. Fedschenk. Reis, p. 38, pl. 3. f. 36 (1874); Staud. Cat. Lep. pal. p. 142. ? *Orosagrotis*. W. Turkestan.

„ *dulcis*, Alph. Hor. Soc. Ent. Ross. xxvi. p. 444 (1892); id. Rom. Mém. ix. p. 5, pl. 2. f. 2; Staud. Cat. Lep. pal. p. 142. ? near *Euxoa tritici* ..... Tibet.

„ *lapidosa*, Græser, Berl. ent. Zeit. 1892, p. 220; Staud. Cat. Lep. pal. p. 143 ..... Amurland.

„ *defessa*, Led. Wien. ent. Mon. 1858, p. 144, pl. 2. f. 8; Staud. Cat. Lep. pal. p. 143. ? *Episilia* near *simulatrix*. Syria.

„ *haverkampfi*, Stndf. Berl. ent. Zeit. 1893, p. 359; Staud. Cat. Lep. pal. p. 144. ? *Lycophotia* near *renigera*. Corsica.

„ *decorata*, Staud. Stett. ent. Zeit. 1881, p. 414; id. Cat. Lep. pal. p. 144. ? *Lycophotia* near *renigera*. W. Turkestan.

„ *caucasica*, Staud. Stett. ent. Zeit. 1877, p. 180; id. Cat. Lep. pal. p. 144. ? *Lycophotia* near *renigera*. Armenia.

„ *parnassiphila*, Staud. Stett. ent. Zeit. 1881, p. 414; id. Cat. Lep. pal. p. 144. ? *Lycophotia* near *renigera*. W. Turkestan.

„ *forficula*, Ev. Bull. Soc. Nat. Mosc. 1851, ii. p. 629; id. 1856, ii. p. 217, pl. 1. f. 6; Staud. Cat. Lep. pal. p. 145. ?=*Lycophotia renigera* ..... Armenia.

„ *rattus*, Alph. Rom. Mém. v. p. 86 (1889); Staud. Cat. Lep. pal. p. 146. ? *Euxoa* near *nigricans* ..... Tibet.

„ *fallax*, Ev. Bull. Soc. Nat. Mosc. 1854, iii. p. 185; id. 1856, ii. p. 176, pl. 3. f. 5; Herr.-Schäff. Neue Schmett. f. 15; Staud. Cat. Lep. pal. p. 147. ? *Euxoa* near *tritici*. W. Turkestan.

„ *haifæ*, Staud. Iris, x. p. 168, pl. 4. f. 8 (1897); id. Cat. Lep. pal. p. 147. ? *Euxoa* near *segetis* ..... Syria.

Agrotis arenosa, Staud. Stett. ent. Zeit. 1859, p. 213; Rmbr. Cat. Lep. And. pl. 12. f. 1; Staud. Cat. Lep. pal. p. 147. ? *Euxoa* near *spinifera* ..... S. Spain.

„ *spissa*, Staud. Iris, viii. p. 357, pl. 6. f. 6 (1895) = *spissilinea*, Staud. Iris, ix. p. 253 (1896); id. Cat. Lep. pal. p. 147. ? *Euxoa* near *tritici*..... Mongolia.

„ *carthalina*, Christ. Iris, vi. p. 91 (1893); Staud. Cat. Lep. pal. p. 149. ? *Euxoa*, Sect. I. ..... Armenia.

„ *tristis*, Staud. Iris, x. p. 333 (1897); id. Cat. Lep. pal. p. 150. ?=*Euxoa tritici*. Mongolia; S.E. Siberia.

„ *anarmodia*, Staud. Iris, x. p. 170, pl. 4. f. 9 (1897); id. Cat. Lep. pal. p. 150. ? near *Euxoa segetis*. Syria.

„ *solida*, Ersch. Fedsch. Reis. p. 40, pl. 3. f. 41 (1874); Staud. Cat. Lep. pal. p. 150. ? *Euxoa*. Fergana.

„ *nigricostata*, Staud. Stett. ent. Zeit. 1888, p. 248; id. Rom. Mém. vi. p. 421, pl. 6. f. 6; id. Cat. Lep. pal. p. 151. ? *Euxoa* near *corticea* ..... S.E. Siberia.

„ *dirempta*, Staud. Stett. ent. Zeit. 1859, p. 212; id. Cat. Lep. pal. p. 152. ?=*Euxoa crassa* ..... Spain.

„ *bifurca*, Staud. Stett. ent. Zeit. 1881, p. 423; id. Cat. Lep. pal. p. 153. ? *Euxoa*, Sect. II..... W. Turkestan.

„ *characteristica*, Alph. Rom. Mém. vi. p. 31, pl. 1. f. 9 (1892); Staud. Cat. Lep. pal. p. 153. ?=*Euxoa robusta* ..... W. China.

„ *internexa*, Wlk. Entom. v. p. 128 (1870). Type lost. Arabia.

„ *inobtrusa*, Wlk. Entom. v. p. 128 (1870). Type lost. Arabia.

„ *mollis*, Wlk. Entom. v. p. 129 (1870). Type lost. Arabia.

„ *marginata*, Wlk. Entom. v. p. 129 (1870). Type lost. Arabia.

„ *punctipes*, Wlk. xxxii. p. 695 (1865). Type lost. Ceylon.

„ *congrua*, Wlk. xxxii. p. 695 (1865). Type lost. Ceylon.

„ *costalis*, Wlk. Char. Lep. Het. p. 69 (1869). Type lost. Australia.

„ *transversa*, Wlk. Char. Lep. Het. p. 70 (1868). Type lost. Australia.

„ *confluxa*, Saalm. Lép. Madag. p. 286 (1891). Madagascar.

„ *separata*, Guen. Noct. i. p. 313 (1852) ..... Abyssinia.

„ *bilix*, Guen. Noct. i. p. 277 (1852)..... Cape Colony.

„ *lanidorsa*, Guen. Noct. i. p. 283 (1852).... Cape Colony.

„ *pallidula*, Wlk. Melliss' St. Helena, p. 183 (1875). St. Helena.

„ *vetusta*, Wlk. xxxii. p. 691 (1865). Type lost. Canada.

„ *azif*, Streck. Lep. Rhop. & Het. Suppl. i. p. 6 (1898). *Euxoa* near *detersa* ..... New York.

„ *numa*, Streck. Lep. Rhop. & Het. Suppl. i. p. 6 (1898). *Euxoa* near *alticola* ..... Washington.

„ *atha*, Streck. Lep. Rhop. & Het. Suppl. i. p. 6 (1898). *Feltia* near *vancouverensis*..... Washington.

Agrotis annir, Streck. Lep. Rhop. & Het. Suppl. i. p. 6 (1898).
Euxoa ..... Colorado.
„ *dargo*, Streck. Lep. Rhop. & Het. Suppl. i. p. 6 (1898).
Euxoa near *niveilinea* ..... Colorado.
„ *colla*, Streck. Lep. Rhop. & Het. Suppl. i. p. 6 (1898).
Euxoa near *pallipennis* ..... Colorado.
„ *abar*, Streck. Lep. Rhop. & Het. Suppl. ii. p. 5 (1899).
Euxoa near *decolor* ..... Colorado.
„ *achor*, Streck. Lep. Rhop. & Het. Suppl. ii. p. 5 (1899).
Euxoa near *cænis* ..... Colorado.
„ *agema*, Streck. Lep. Rhop. & Het. Suppl. ii. p. 5 (1899).
Euxoa near *plagigera* ..... Colorado.
„ *alko*, Streck. Lep. Rhop. & Het. Suppl. ii. p. 5 (1899).
Euxoa near *messoria* ..... Colorado.
„ *gian*, Streck. Lep. Rhop. & Het. Suppl. i. p. 6 (1898).
Euxoa ..... Arizona.
„ *apicalis*, Herr.-Schäff. Corr.-Blatt Regensb. 1868, p. 149. Cuba.
„ *submuscosa*, Herr.-Schäff. Corr.-Blatt Regensb. 1868, p. 149. Cuba.
„ *faticana*, Staud. Iris, vii. p. 85 (1894). ? *Feltia*. Bolivia.
Pachnobia roosta, Smith, Trans. Am. Ent. Soc. xxix. p. 203 (1903). Alaska.
Feltia obliqua, Smith, Can. Ent. xxxv. p. 129 (1903) .. Canada.
„ *hudsonii*, Smith, Can. Ent. xxxv. p. 130 (1903) .. Canada.
Noctua trumani, Smith, Can. Ent. xxxv. p. 128 (1903).. Canada.
„ *brenna*, Cram. Pap. Exot. iv. pl. 396 H (1782). ? *Agrotis*. Surinam.
„ *intermixta*, Guen. Noct. i. p. 337 (1852). Hab. ignotus.
„ *dimidiata*, Phil. Linn. Ent. xiv. p. 293 (1860). Chili.
Ufeus faunus, Streck. Lep. Rhop. & Het. Suppl. i. p. 9 (1898). New Mexico.
Rhynchagrotis niger, Smith, J. N.Y. Ent. Soc. xi. p. 3 (1903). Washington.
„ *meta*, Smith, J. N.Y. Ent. Soc. xi. p. 3 (1903). California.
Abagrotis ornatus, Smith, J. N.Y. Ent. Soc. xi. p. 4 (1903). Br. Columbia.
Eueretagrotis inattenta, Smith, J. N.Y. Ent. Soc. xi. p. 5 (1903). Canada.
Epilecta albidata, Wlk. xxxiii. 708 (1865). Type lost. Hab. ignotus.

SUPPLEMENT.

September 10th, 1903.

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42. **Chloridea** *albidentina* insert *Poaphila* **turbata**, Wlk. xiv. 1834 (1858); Smith, Cat. Noct. N. Am. p. 260, which has precedence.

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*163 *a*. **Melicleptria melibaphes.** (Plate LXXVIII. fig. 17.)

Melicleptria melibaphes, Turner, ined.

♂. Head and tegulæ orange; thorax ochreous greyish; abdomen ochreous. Fore wing uniform ochreous greyish, the costal edge orange. Hind wing pale ochreous. Underside of fore wing orange-yellow, the discal area suffused with fuscous.

Hab. Queensland, Thursday I., type † ♂ in Coll. Turner. *Exp.* 20 millim.

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610 *a*. **Feltia hudsoni.** (Plate LXXVIII. fig. 19.)

Feltia hudsoni, Smith, Can. Ent. xxxv. p. 130 (1903).

♀. Head and thorax violaceous white mixed with pale brown; tegulæ with ill-defined blackish medial line; patagia with some black scales on upper edge; pectus, legs, and abdomen white, the last tinged with ochreous. Fore wing violaceous grey, suffused with pale brown except below costa to beyond middle, on inner area, and between postmedial and subterminal lines; subbasal line represented by an oblique black striga from costa and an inwardly oblique striga from cell, defined by white on outer side; antemedial line represented by a black line from median nervure to vein 1, defined by white on inner side; claviform very elongate, defined by black; orbicular grey defined by black, **V**-shaped, open above; reniform ochreous defined by black; postmedial line defined by the contrast between the brown and grey areas and with some small dentate black marks before it at middle, bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by a series of small dentate black marks, angled outwards on veins 7, 4, 3; a terminal series of black points; cilia with ochreous line at base. Hind wing ochreous white, the termen tinged with brown.

Hab. Canada, Alberta, Calgary (*Wolley Dod*), 1 ♀. *Exp.* 32 millim.

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616 *a*. **Feltia obliqua.** (Plate LXXVIII. fig. 20.)

Feltia obliqua, Smith, Can. Ent. xxxv. p. 129 (1903).

♂. Head ochreous brown; sides of palpi and frons blackish; tegulæ ochreous at base, with black medial line and grey tips; thorax grey slightly mixed with brown, the patagia with slight black edges; tibiæ and tarsi blackish, ringed with white; abdomen fuscous brown, irrorated with grey below. Fore wing grey with a slight purplish tinge, the medial costal area rather darker; subbasal line represented by two black points on costa; the antemedial line black slightly defined by grey on inner side, minutely waved from costa to submedian fold, angled inwards on vein 1 and very strongly outwards above inner margin; orbicular and reniform small, grey defined by black, the former produced to a slight point on outer side, the latter with black streak in discal fold from it to the postmedial line, which is black, double at costa, then the outer line indistinct, dentate, very slightly bent outwards below costa, excurved to vein 4, then oblique; subterminal line indistinct, whitish, defined by slight dentate black marks before it at middle and prominent ones beyond it, angled outwards at vein 7 and dentate to termen at veins 4, 3; a dark line near base of cilia. Hind wing uniform brownish grey; the cilia grey, with a brown line near base; the underside pale, the costal and terminal areas tinged with brown, a small discoidal spot and sinuous postmedial line.

Hab. Canada, Alberta, Calgary (*Wolley Dod*), 1 ♂. *Exp.* 36 millim.

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765 *a*. **Agrotis mœrens.** (Plate LXXVIII. fig. 18.)

Agrotis mœrens, Staud. Iris, ix. p. 365, pl. 4. f. 3 (1896); id. Cat. Lep. pal. p. 139.

♂. Head and thorax dark brown mixed with grey; tegulæ with the basal half blackish; abdomen ochreous tinged with fuscous, the ventral surface blackish. Fore wing blackish, suffused with purplish grey; the subbasal line represented by double black striæ from costa and median nervure; the antemedial line slightly waved, excurved above inner margin; claviform well developed, defined by black; orbicular and reniform defined by the cell before and between them and the area from the latter to postmedial line being black, the orbicular open above; postmedial line indistinct, minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; subterminal line represented by an indistinct series of small dentate black marks, angled outwards at vein 7 and excurved at middle. Hind wing fuscous brown, rather paler in cell; the underside pale except costal and terminal areas; a slight discoidal spot and curved postmedial line.

Hab. Mongolia, Urga, Sajan, 1 ♂. *Exp.* 38 millim.

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Genus APHARETRA.

Type.

Apharetra, Grote, Proc. Ent. Soc. Wash. iv. p. 368 (1901), non descr..... *dentata.*

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with rough hair; frons smooth; eyes large, round, overhung by long cilia; antennæ of male ciliated; head and thorax clothed with rough scales and hair, the prothorax with spreading crest; mid and hind tibiæ spined towards extremities; abdomen smoothly scaled. Fore wing rather narrow, the margins subparallel, the apex rounded; veins 3 and 5 from near angle of cell, 6 from upper angle, 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Differs from *Isochlora* in the thorax being clothed with scales and hair.

A. Fore wing grey-brown; hind wing yellowish, the terminal area brown ..... *dentata.*
B. Fore wing black mixed with grey; hind wing fuscous ..... *pyralis.*

1019 *a*. Apharetra dentata. (Plate LXXVIII. fig. 21.)

Apatela dentata, Grote, Can. Ent. vii. p. 222 (1875); Smith, Cat. Noct. N. Am. p. 37.

♂. Head and thorax grey-brown; tarsi banded with blackish; abdomen pale ochreous brown. Fore wing grey, suffused and irrorated with brown, especially beyond the reniform and on medial part of terminal area; the subbasal line represented by a black striga from costa; the antemedial line oblique from costa to median nervure, then irregularly waved; orbicular and reniform greyish, the former very ill defined, the latter rather large and defined by black; postmedial line minutely dentate, strongly bent outwards below costa, excurved to vein 4, then incurved; some pale points on costa towards apex; subterminal line very indistinct and somewhat dentate, defined by a brown shade on its inner side at costa and obscured by the brown patch on medial part of terminal area; a terminal series of small blackish lunules; cilia chequered fuscous and grey. Hind wing yellowish, the terminal area suffused with brown; the cilia whitish, with a brown line through them; the underside whitish, the costal and terminal areas irrorated with brown.

Hab. Canada; U.S.A., Eastern and Northern States, 1 ♂ type, Adirondack Mts. *Exp.* 34 millim.

*1019 *b*. Apharetra pyralis. (Plate LXXVIII. fig. 22.)

Acronycta pyralis, Smith, Ent. News Philad. vii. p. 26 (1896); Dyar, Cat. N. Am. Lep. p. 105.

♀. Head and thorax black mixed with grey; tarsi ringed with grey; abdomen fuscous brown irrorated with grey. Fore wing

black irrorated with grey, the lines defined by grey; a subbasal line from costa to submedian fold angled outwards below costa; the antemedial line oblique from costa to median nervure, then irregularly waved; orbicular and reniform slightly defined by black, the former round; postmedial line dentate, very strongly bent outwards below costa, excurved to vein 4, then strongly incurved; subterminal line hardly traceable; a blackish patch on medial part of terminal area; some slight terminal black points; cilia chequered fuscous and grey. Hind wing fuscous, brownish towards base; the cilia white, with a brown line through them; the underside brownish grey irrorated with fuscous, a curved postmedial line.

Hab. CANADA, Alberta, Calgary, in Coll. Wolley Dod. *Exp.* 34 millim.

ALPHABETICAL INDEX.

[Synonyms are printed in *italics*.]

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